Illinois Department of
Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
www.dnr.illinois.gov

Bruce Rauner, Governor
Wayne A. Rosenthal, Director

Authorization for Incidental Take and Implementing Agreement

Pursuant to the Illinois Endangered Species Protection Act (Act) (520 ILCS 10/5.5) and the regulations adopted to implement the Act (17 Ill. Adm. Code 1080), authorization is hereby granted to Union Pacific Railroad (hereinafter referred to as UPRR) for the incidental take of the purple wartyback (*Cyclonaias tuberculata*), black sandshell (*Ligumia recta*), sheepnose mussel (*Plethobasus cyphyus*), river redhorse (*Moxostoma carinatum*), and pallid shiner (*Hybopsis amnis*). The Illinois Department of Natural Resources (hereinafter referred to as the Department) has determined that the taking is incidental to activities associated with the replacement of the existing one-track railroad bridge over the Kankakee River at Wilmington, Will County, with a new two-track bridge. The location of the bridge is approximately 41°18'40"N, 88°09'02"W, or Milepost 52.70 of the UPRR Joliet Subdivision in the NW ¼ of the SW ¼ of Section 25, Township 32 North, Range 9 East in Wilmington Township in Wilmington, Illinois. The Kankakee River at Wilmington is a part of the Kankakee River Illinois Natural Areas Inventory site (INAI#0980). It has been included on the Natural Areas Inventory because of the high diversity of aquatic species present in this reach of the river.

Procedural History

The Department received a conservation plan from CH2M HILL on behalf of UPRR on November 11, 2014, as a request for authorization for the incidental take of freshwater mussel species along the Joliet to East St. Louis stretch of the railroad line. Of the 120 stream crossings, only three were identified to have suitable habitat for mussels. Of those three crossings, only one (Kankakee River) was confirmed to pose a risk of impact to listed mussels. The Department requested additional information on November 14, 2014, to make the conservation plan complete. A revision to the conservation plan was received on January 8, 2015. Further data analysis revealed records of listed fish in the Kankakee River crossing footprint, therefore the applicant was advised to consider including fish. Revisions to the conservation plan were received by the Department on March 5 and March 20, 2015, at such time the conservation plan was deemed complete as prescribed by 17 Ill. Adm. Code 1080.10. The public notice period will be detailed under #6 of the Compliance section below.

Compliance with the Illinois Endangered Species Protection Act

The Act includes six criteria that must be satisfied for the authorization of incidental take of an endangered or threatened species. These criteria and the Department's determination for each are listed below.

1. The taking will not be the purpose of, but will only be incidental to, the carrying out of an otherwise lawful activity:

   The stated and apparent purpose of this proposed action is the replacement of an existing one-track railroad bridge over the Kankakee River at Wilmington, Will County, with a new two-track bridge. This bridge replacement is a part of a larger project that will provide for high-speed passenger rail transportation between Joliet and East St. Louis. Temporary bridges will be constructed on both sides of the existing bridge to enable the demolition of the existing bridge and construction of the new bridge. The temporary bridge on the southeast side will provide a construction area from which the piers for the new bridge can be installed. The temporary bridge on the northwest side will provide a construction area from which the superstructure and piers from the existing bridge can be demolished, and the new superstructure can be erected. The temporary structures will be erected using pipe piles screwed directly into bedrock. The plan includes removal of the existing track structure from the superstructure using cranes on the temporary bridge. Following track removal, the existing superstructure will be cut into manageable pieces while still in place, then lifted using the cranes and hauled away. Cofferdams will be used during the construction of the piers for the new bridge. Cofferdams will be dewatered using pumps and then footings will be constructed. The existing piers will be within the cofferdam areas, so they will be demolished without the use of explosives. The debris will be removed while inside the dewatered area. UPRR has estimated the area of mussel habitat that will be directly affected by the project (work bridges and cofferdams) to be **0.23 acre**, including approximately 0.03 acre that will be permanently lost to the placement of piers for the new bridge. Take of purple wartyback, black sandshell, sheepnose mussel, river redhorse, and/or pallid shiner may occur as a result of placement of temporary structures (coffer dams, pipe piles), construction of permanent structures (piers) in or on the river bottom, or indirectly through habitat alteration. Individuals may be crushed during construction, stranded or killed in the pump during dewatering of the area within coffer dams, or otherwise impacted by habitat alteration. Potential impacts to aquatic species may also occur due to noise and vibration from demolition and/or construction. The take of these species that could result from this project is not the purpose of UPRR's activities, but is incidental to the carrying out of an otherwise lawful activity.

2. The parties to the conservation plan will, to the maximum extent practicable, minimize and mitigate the impact caused by the taking:

   A conservation plan prepared by CH2M HILL on behalf of UPRR describes measures that will be implemented to minimize the potential adverse effects of the project on purple wartyback, black sandshell, sheepnose mussel, river redhorse, and pallid shiner. Minimization measures described in the conservation plan include:

   A pre-construction briefing for all project personnel to make them aware of the presence of endangered and threatened species and the importance of adhering to approved project plans in order to minimize and avoid adverse impacts to those species.

Implementation of a standard soil erosion and sedimentation control plan throughout the duration of the project to minimize the introduction of sediments to the Kankakee River.

A pre-construction mussel survey of the project area will be performed by a malacologist retained by UPRR. All mussels found will be collected and moved to appropriate substrates outside of the project area. Mussels will be hand placed in the relocation site. Each mussel will be aged, sexed, and measured, and its location will be recorded using Geographic Positioning System (GPS) coordinates.

A post-construction mussel survey will be performed at locations adjacent to the construction footprint to assess the condition of mussel populations. A report on this survey will be provided to the Department by January 31 of the year following completion of project construction.

During dewatering of the area within coffer dams, any fish stranded in the dewatered area will be captured and released outside of the coffer dam.

Pile driving will not be used, nor will spread footing, thus eliminating vibration impacts and minimizing disturbance of the river bottom and associated sediment. The use of inflatable bladders or sand bags, instead of driving sheet piling for the cofferdams, is also being considered to eliminate vibration and minimize sedimentation during construction of the permanent structure.

During the primary fish spawning period (March 15 to July 15) the following additional measures will be implemented to reduce the potential adverse effects on fish:

> Impermeable silt curtains and bubble curtains will be used to mitigate vibration impacts during construction. Silt/turbidity curtains installed around areas of in-stream work will prevent re-suspended sediment from migrating downstream and potentially silting in spawning and foraging areas.
>
> Turbidity monitoring will be used to determine the effectiveness of cofferdams and silt curtains in preventing the re-suspension and downstream movement of sediment. If necessary, the water pumped from within the cofferdams will be filtered or sediment will be allowed to settle out prior to discharge to the river.

Additional minimization and/or mitigation measures may be required beyond those proposed by UPRR above, based on the life history needs of the purple wartyback, black sandshell, sheepnose mussel, river redhorse, and/or pallid shiner. <u>Further required measures are presented under the Authorities section below.</u>

3. The parties to the conservation plan will ensure that adequate funding for the conservation plan will be provided:

   This project is funded through the American Recovery and Reinvestment Act. There is a cooperative agreement in place between the Federal Railroad Administration, the Illinois

Department of Transportation, and UPRR, as owner, to implement any mitigation required for this project. Adequate funding for mitigation and monitoring will be available to meet the goals of the conservation plan.

4. Based on the best available scientific data, the Department has determined that the taking will not reduce the likelihood of survival or recovery of the endangered species or threatened species in the wild within the State of Illinois, the biotic community of which the species are a part, or the habitat essential to the species' existence in Illinois:

   The purple wartyback is listed as a threatened species in Illinois because its current range and abundance are greatly reduced compared to historic records. The current extant range for purple wartybacks has declined 28% from 1977-1999 and 80% historically. Most populations are in the Vermilion, Kankakee and Ohio River drainages. This long lived species is generally found in medium to large rivers with a substrate of gravel or mixed sand and gravel. This habitat is threatened by an accumulation of industrial or municipal contaminants, sedimentation, and hydrologic alteration. Purple wartybacks spawn in early summer and release glochidia the same summer. Immature purple wartyback are dependent on several catfish species for survival and dispersal.

   The Illinois Natural Heritage Database includes 37 element occurrence records for the purple wartyback that are classified as extant populations. Many of the known occurrences were observed as single individuals and are of unknown long-term viability.

   The Department has issued four previous incidental take authorizations for purple wartyback. Three of those projects were bridge repair/replacement projects and the fourth was for the removal of an oil pipeline river crossing. Minimization and mitigation measures included working outside the reproductive season, pre-construction relocation of mussels, and post-construction surveys to determine the success of relocations. Post-construction surveys completed to date show a continued presence of purple wartyback in and near project sites but at a greatly reduced abundance.

   Quantitative sampling performed by Ecological Specialists, Inc. found 8.3 (+/- 3.2) mussels per m^2 (+/-2SE) with 2% of those found being purple wartyback, which when extrapolated to the project footprint indicates a potential take of 154 (95-214) purple wartyback mussels.

Freshwater mussels are secretive animals that spend almost all of their lives buried in river (or rarely, lake) bottoms. They require stable river / stream substrates and depend on host fish for completion of one stage of their life cycle. Black sandshell mussels have an elongate shell that is pointed at the posterior end with a smooth, shiny, and dark green to brown or black surface. Black sandshell prefers gravel and/or firm sand substrates in medium to large rivers. Their larvae (glochidia) have been observed to transform on members of the sunfish family as well as walleye (*Sander vitreus*) and sauger (*Sander canadense*). It is a widespread species that is fairly common in the Upper and Middle

Mississippi, Ohio, Rock, and Kankakee Rivers but is rare elsewhere. It formerly occupied large stretches of the Fox, Illinois, Vermilion, and Wabash Rivers.

The Illinois Natural Heritage Database includes 99 element occurrence records for the black sandshell that are classified as extant populations. The black sandshell is listed as a threatened species in Illinois because of its reduced distribution and abundance relative to historic records. The species now occurs in about 47% of drainages in which it was formerly found. The decline of the species is believed to be related to siltation and pollution as well as the fragmentation of riverine habitat by dams.

The Department has issued 14 previous authorizations for the incidental take of black sandshell. Project types included bridge repair/replacement, dredging of barge/boat channels, pipeline installation or removal, dam removal, and placement of rock and/or rip rap for navigation improvements. Typical minimization and mitigation measures have included reduction of the project footprint, relocation of mussels prior to construction, funding of species research, funding of species propagation, and in-lieu fee payments. Post-project surveys completed to date show the continued presence of black sandshell in and near project sites.

Quantitative sampling performed by Ecological Specialists, Inc. found 8.3 (+/- 3.2) mussels per m^2 (+/-2SE) with 2% of those found being black sandshell, which when extrapolated to the project footprint indicates a potential take of 154 (95-214) black sandshell mussels.

The sheepnose mussel is listed as an endangered species in Illinois and federally because of its greatly reduced range and abundance in the state. The current extant range for sheepnose has declined 50% from 1977-1999 and 81% historically. Sheepnose mussels were once found in most of the major rivers in Illinois, including the Mississippi, Wabash, Ohio, Rock, Kaskaskia, Kankakee, Illinois, and Fox. Its population has likely been reduced to critical levels by dams, dredging, and pollution. All recent records are from the Kankakee or Mississippi Rivers. The species are reported to live as long as 30 years. Sheepnose are often associated with riffles and gravel or cobble substrates in depths greater than two meters in slight to swift currents in medium to large rivers. Sheepnose are thought to spawn in early summer and glochidia are released later the same summer in jellylike masses that resemble small worms to attract fish. The only known host of immature sheepnose is sauger (*Sander canadense*).

The Illinois Natural Heritage Database includes eight element occurrence records for the sheepnose mussel that are classified as extant populations. These occurrences are limited to Kankakee, Rock Island, Whiteside, and Will Counties. Where the species can still be found, it occurs in small numbers with unknown long-term viability.

The Department has issued three previous incidental take authorizations for sheepnose mussel for a bridge replacement, pipeline removal, and installation of a diffuser to discharge cooling water. Authorizations have required the relocation of mussels prior to

work, working outside the reproductive season, and post-construction surveys to evaluate the success of relocation. One follow up survey showed that sheepnose mussels were still present in the project area five years after project completion.

No sheepnose mussels were collected from the proposed bridge location during the surveys conducted in July 2014; thus, quantitative estimates of take are not currently possible. The species has, however, been found alive nearby in both 2013 and 2014. These records indicate that a small population of sheepnose mussels persists in the area and that there is potential for take.

The river redhorse is listed as a threatened species in Illinois because of its limited range and threats to its habitat, such as damming, siltation, and pollution. Historically, the species was found in the Wabash, Rock and Illinois River drainages. The species is most often found in high gradient rivers with gravel where they visually search for their preferred prey items of mollusks and crustaceans. River redhorse are known to construct redds (nests) by sweeping sediments out of a gravelly area. Spawning then occurs in redds between April and June and eggs hatch approximately four days later.

The Illinois Natural Heritage Database includes 31 occurrences of the river redhorse that are classified as extant. Recent records of the species are from the Illinois River and its tributaries, Wabash River, and Mississippi River.

The Department has issued five previous authorizations for incidental take of the river redhorse. These were for bridge replacement projects, installation of hydropower facilities, a cooling water discharge, and two dam removal projects. An authorization for incidental take of river redhorse also has been requested for installation of a hydropower facility. These authorizations include minimization and mitigation measures including avoiding instream work during the spawning season, relocating fish and mussels, monitoring species and dissolved oxygen, setting minimum flow allowances, habitat creation, species propagation, and minimizing project footprint, construction vibrations, erosion, and siltation.

A fish survey of the proposed bridge location found three river redhorse in July 2014. UPRR has estimated that this project will result in the take of three or fewer river redhorse.

The pallid shiner is listed as an endangered species in Illinois due to its greatly reduced distribution. The species is apparently less common than in earlier years, found in only five watersheds. The species is associated with river pools with sandy substrate and is often at ends of sand and gravel bars. Pallid shiners are apparently intolerant of siltation and turbidity and its habitat is threatened by dams and sedimentation. The spawning habits of the pallid shiner are unknown.

The Illinois Natural Heritage Database includes 11 element occurrence records for the pallid shiner that are classified as extant populations. Those occurrences are in Jo Daviess, Edgar, Champaign, Kankakee, Will, and Grundy Counties.

The Department has issued one previous incidental take authorization for pallid shiners for the installation of a cooling water discharge system in the Kankakee River. Another ITA for the installation of hydropower facilities in an existing dam is pending. These ITAs include minimization and mitigation measures such as relocation of trapped fish, annual fish monitoring, minimum flow assurances, monitoring of dissolved oxygen, and habitat creation.

A fish survey of the proposed bridge location was conducted by the Illinois Natural History Survey in July 2014. That survey found five pallid shiners. UPRR has estimated that this project will result in the take of five or fewer pallid shiners.

Based on the biology of the species involved, the minimization and mitigation measures described under #2 above and in the Authorization section below, and the understanding that vulnerability and recovery information on the species remains limited; it is the conclusion of the Department that the taking anticipated as a result of the project will not reduce the likelihood of survival or recovery 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.

5. Any measures required under Section 5.5(b)(6) of the Act will be performed:

   These measures are listed below under "Authorization." This authorization is, by definition, subject to those terms and conditions and the signature of a representative of UPRR indicates a commitment to performing those measures.

6. The public has received notice of the application and has had the opportunity to comment before the Department made any decision regarding the application:

   Public notice of UPRR's request for authorization of incidental take was published in the Breeze Courier (official state newspaper) on April 22, 2015, and in the (Wilmington) Free Press Advocate on April 22, April 29, and May 6, 2015. A copy of the conservation plan was deposited at the Wilmington Public Library, where it was available for public review. The deadline for public comment was June 5, 2015. No public comments were received.

Authorization

It is the determination of the Department that the measures mentioned above and in this section below that will be implemented by UPRR will adequately minimize and mitigate the anticipated taking of purple wartyback, black sandshell, sheepnose mussel, river redhorse, and pallid shiner incidental to activities associated with the replacement of the existing one-track railroad bridge

over the Kankakee River at Wilmington, Will County, with a new two-track bridge. Further, the Department has concluded that the take authorized herein will not reduce the likelihood of survival or recovery of the purple wartyback, black sandshell, sheepnose mussel, river redhorse, or pallid shiner in the wild within the State of Illinois, the biotic community of which the species are a part, or the habitat essential to the species' existence in Illinois.

All terms and conditions included in the aforementioned conservation plan submitted by UPRR to the Department are incorporated into this agreement by reference and are made a part thereof.

Pursuant to Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5] and the Administrative Rules for the Incidental Taking of Endangered and Threatened Species (Ill. Adm. Code 1080.40(b)], this authorization is issued subject to the following terms and conditions, which may include additions or modifications to the minimization and mitigation measures proposed by the applicant under Compliance condition #2 above.

1. This authorization is effective upon the signature of the Department and shall remain in effect for a period of **seven (7) years** from the date of the Department signature, unless terminated by written agreement of both parties.

   This authorization may be revoked pursuant to the Act and Ill. Adm. Code 1080.80(b) if the Department finds that UPRR has failed to comply with any of these terms and conditions or has been responsible for the taking of purple wartyback, black sandshell, sheepnose mussel, river redhorse, or pallid shiner beyond that which is incidental to activities associated with the replacement of the existing one-track railroad bridge over the Kankakee River at Wilmington, Will County, with a new two-track bridge.

2. The effective period of this authorization may be altered by mutual written agreement between UPRR and the Department. The Illinois Endangered Species Protection Board shall be notified of any such alteration.

   Any substantive changes, including but not limited to a change in the project footprint or a change in the Illinois endangered or threatened species which could potentially be affected, will require that a new conservation plan be submitted to the Department to initiate the review and public notice process as required by the Act.

3. This authorization is non-transferable.

4. The Department reserves the right of entry to inspect potential habitat and species management practices. Notice must be provided in advance to UPRR. Department staff must comply with all applicable Federal Railroad Administration and UPRR safety requirements.

5. Consultants hired by UPRR to perform species surveys shall hold the necessary permits for work with non-listed and listed species; these include an IDNR Scientific Collection Permit and an IDNR Endangered Species Permit.

6. UPRR shall notify the Department's Endangered Species Program of commencement and completion of the bridge replacement project.

7. All project personnel shall receive educational materials regarding the sensitive ecological context of the project. Materials will include identification information on the potentially affected State-listed species, response protocol for when the species is encountered, live or dead, and explanation of environmental restrictions. A copy of the educational materials shall be provided to the Department. The Department shall be informed of any sighting of State-listed species and provided location information within 48 hours.

8. All mussels located within the project footprint shall be relocated to suitable habitat preapproved by the Department. The Department shall review the proposed relocation sites and respond within five (5) working days of submittal. Listed species shall be PIT tagged, measured, aged, sexed (when possible), and new locations documented by geographic coordinates.

   The pre-construction relocation of mussels shall be carried out no more than 45 days prior to the initiation of in-stream project activity. Mussels will not be relocated when air temperatures are at or below 32 degrees Fahrenheit, nor when water temperatures are at or below 40 degrees Fahrenheit. All mussels will be held in mesh bags suspended in the river or in containers of water that is changed every hour (every half-hour when air temperatures are at or above 87 degrees Fahrenheit). Water in containers shall be taken from the river where the mussels were collected. No mussels shall be held for more than three (3) hours before being returned to suitable habitat in the river. If any mussels cannot be identified to species at the survey site, they shall be photographed for identification and returned to the river. A report documenting mussel relocation information shall be provided to the Department within 90 days of relocation.

9. Fish and/or mussels that may become stranded within the dewatered area shall be relocated to areas outside of the coffer dam – fish immediately downstream, mussels upstream to suitable habitat pre-approved by the Department.

10. Turbidity monitoring shall occur between March 15 and July 15, upstream and downstream of the project area for the duration of in-stream work or until upstream and downstream turbidity measurements are similar (excluding any period when work is being solely conducted within cofferdams). Silt/turbidity curtains shall be installed around all areas of in-stream work. Silt/turbidity curtains shall be monitored regularly for effectiveness and repaired promptly when failing. Turbidity monitoring shall occur 50-100 meters (m) upstream of the project location; and 25m, 50m, and 100m downstream or until the downstream turbidity measurement is similar to the upstream measurement. Monitoring locations shall include an upstream location which is not impacted by in-stream bridge work and downstream locations directly downstream of where in-stream work is occurring. Monitoring shall occur twice each

day during in-stream work; once in the morning prior to work and once in the afternoon while work is ongoing. A report documenting turbidity measurements; including, but not limited to the methodology utilized, the timing and frequency of data collection, a comparative analysis between the upstream and downstream locations, and a map of those locations; shall be provided to the Department within 60 days of completion of turbidity monitoring.

11. Post-construction monitoring for fish and mussels shall be conducted in Year 2 following project completion, at areas within the project footprint and any relocation sites. Surveys shall be comparable to the original sampling methods to ensure comparable results. Effort shall be adequate to determine if mussels have recolonized the project area, if the density and recruitment of mussels has changed since the project, and the survival rate of relocated mussels relative to non-relocated mussels. A report shall be provided to the Department by January 31 of the year following the post-construction monitoring.

12. Mitigation settlement funds submitted to the Department earmarked for the conservation benefit of State-listed species are non-refundable, including events of revocation or termination. As mitigation for the potential taking of purple wartyback, black sandshell, sheepnose mussel, river redhorse, and pallid shiner; UPRR shall either pay an approved in-lieu fee to the Department to cover such expenses or provide the equivalent value in conservation benefit to the species through habitat restoration or species research.

    The Department calculates mitigation for potential impacts to listed fish and mussels through analysis and scaling of the species status, population trend, project footprint size, habitat impacts, and the estimate of take. These factors combine to establish the units of mitigation toward an applicable project focused on providing conservation benefit to the species commensurate with the potential impact.

    Based on existing mussel mitigation projects, the Department estimates that the cost of an applicable one-year propagation project for State-listed mussel species would total $27,904 each. The applicant shall be held accountable for 100% of the propagation project costs for **sheepnose mussel** ($27,904), 50% of the propagation project costs for **purple wartyback** ($13,952.00), and 50% of the propagation project costs for **black sandshell** ($13,952.00).

    The Department estimates that the cost of an applicable one-year propagation project for State-listed fish species would total $26,000 each. The applicant shall be held accountable for 50% of the propagation project costs for **pallid shiner** ($13,000.00) and 20% of the propagation costs for the **river redhorse** ($5,200.00). Therefore, whether habitat/research mitigation or compensatory mitigation is preferred by the applicant, **the total conservation benefit value or in-lieu compensatory mitigation due to the Department for this project is $74,008.00**. Mitigation settlement dollars paid to the Department are placed in the Illinois Wildlife Preservation Fund and

earmarked for the conservation benefit of the State-listed species potentially impacted.

Mitigation valuations are based on the Department's best current understanding of the species life history needs and impact analysis relevant to the site's proposed conceptual design elements available at the time of review.

13. Documentation, including reports, maps and other project information required by this authorization, shall be submitted to:

    Illinois Department of Natural Resources
    Office of Resource Conservation
    Endangered Species Program – Incidental Take Authorization Coordinator
    One Natural Resource Way
    Springfield, IL 62702-1271

    (217)557-8243
    DNR.ITAcoordinator@illinois.gov

    The Department's Endangered Species Program shall provide all reports required under this agreement to the Illinois Endangered Species Protection Board and to the Department's Natural Heritage Database.

14. The UPRR official identified below are authorized to execute the agreement. Execution by UPRR indicates acceptance of all terms and conditions described in this authorization.

15. The execution of this agreement does not waive or excuse the responsibilities of UPRR to comply with other Federal, State, or local regulations, including but not limited to obtaining any required permits for the execution of this project.

For the Illinois Department of Natural Resources:

_____
Dr. James Herkert, Director
Office of Resource Conservation

_____
Date

For Union Pacific Railroad:

Steve Cheney
Steve Cheney
Gen. Director M/W – Environmental

Steve Cheney – Gen. Director M/W Environmental
Print Name and Title

2/17/2016
Date