



Illinois Department of Natural Resources

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

JB Pritzker, Governor
Colleen Callahan, 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 Ingram Barge Company (hereinafter referred to as Ingram) for the incidental take of the Federally-endangered and State-endangered Fat Pocketbook (*Potamilus capax*), Orangefoot Pimpleback (*Plethobasus cooperianus*), Pink Mucket (*Lampsilis abrupta*), and Sheepnose (*Plethobasus cyphus*), Federally-threatened and State-endangered Rabbitsfoot (*Quadrula cylindrica cylindrica*), State-endangered Ebonyshell (*Fusconaia ebena*), Elephantear (*Elliptio crassidens*), Ohio Pigtoe (*Pleurobema cordatum*), and Spike (*Eurynia dilatata*), and State-threatened Butterfly (*Ellipsaria lineolata*), Monkeyface (*Quadrula metanevra*), and Purple Wartyback (*Cyclonaias tuberculata*). The US Army Corps of Engineers provided a determination of may affect, likely to adversely affect for the federally listed Fat Pocketbook, Orangefoot Pimpleback, Pink Mucket, Sheepnose, and Rabbitsfoot mussels dated April 23, 2020. The Illinois Department of Natural Resources (hereinafter referred to as Department) has determined that this taking is incidental to activities associated with the construction of a permanent barge fleeting facility near Brookport, between approximate Ohio River Mile 935 and 937.4 along the right (North) descending bank, Massac County, Illinois.

Procedural History

A Conservation Plan prepared by Redwing Ecological Services, Inc., on behalf of Ingram, was submitted to the Department on July 28, 2020, as a request for authorization for the incidental take of Fat Pocketbook, Orangefoot Pimpleback, Pink Mucket, Sheepnose, Rabbitsfoot, Ebonyshell, Elephantear, Ohio Pigtoe, Spike, Butterfly, Monkeyface, and Purple Wartyback mussels for currently proposed actions. The Department requested additional information on August 31, 2020, to make the conservation plan complete as prescribed by Ill. Adm. Code 1080.10. Additional information was received by the Department on September 16, 2020. A conservation plan was approved by the Department on September 17, 2020. The public notice period and public comments will be detailed under #6 of the Compliance section below.

Compliance with the Illinois Endangered Species Protection Act

The Act includes six criteria which 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 be only incidental to, the carrying out of an otherwise lawful activity:

The stated and apparent purpose of this proposed action is to construct and operate a barge fleeting facility that will consist of six (6) barge fleeting areas along approximately 11,300 linear feet of the Ohio River. Currently, the area is used for unorganized barge fleeting, this includes tying barges to trees or anchors onshore, or continuously pushing barges against the shoreline with towboats. This fleeting method requires the grounding of barges against the river bottom and bank, which can result in damage to barges and tow boats, decrease efficiency during barge tow assembly and disassembly, and increase safety concerns due to working in shallow water. Barge contact with the riverbank and channel also causes bank erosion, sediment disturbance, substrate compaction, and water quality degradation. Continuous engine use by tow boats positioned offshore also results in sediment disturbance and water quality degradation in the river channel. The offshore design of the proposed fleeting facility will avoid or reduce these impacts, as well as prevent temporary fleeting along the shoreline in the future.

Each individual of the six (6) fleeting area will cover an area of approximately 1,600 linear feet by 315 linear feet (11.57 acres). The six fleeting areas combined will cover a total area of approximately 69.42 acres. Additionally, the project area will include areas between and around the fleeting areas where barge tows and tow boats will be operating. These additional areas encompass approximately 400 feet between each fleeting area, 370 feet upstream of the fleeting areas, 400 feet downstream of the fleeting areas, and 100 feet towards the Ohio River from the fleeting areas. The additional areas will cover a total of approximately 83.36 acres.

Each of the six (6) fleeting areas will include the same basic elements: two spud barges and two spar barges to provide a mooring structure for the fledged barges. The spud and spar barges will be positioned in a linear configuration (i.e., end-to-end) parallel to the shoreline at a distance of 60 to 150 feet. Each barge will be approximately 200 feet long by 35 feet wide. Tow boats will be used to move the barges into place and maintain their positions until secured. Each spud barge will be secured to the river bottom using two 30-inch diameter spud piles, resulting in a total of four spud piles per mooring structure. Six sets of spud and spar barges will be located in the facility, resulting in a total of 24 spud piles. Each spud pile will have a footprint of approximately five square feet; therefore, the total area of river bottom that will be impacted by the spud piles is 120 square feet. Spud piles will be lowered by crane into a spud well that begins on the barge deck and continues through the hull, allowing the pile to contact the river bottom. This configuration will allow the spud barge to move vertically as the water level fluctuates. The weight of the spud pile will cause it to sink up to five feet into the substrate, and no pile driving will be required. After installation of the spud piles, the spar barges will be connected to the spud barges with barge wires to complete the mooring structure. All work associated with spud/spar barge installation will be performed from the river, and no onshore work will be required. The spud/spar barges are designed to be permanent structures and are not anticipated to be

moved after installation.

A ship anchor will be used at each of the six spud and spar barge configurations as a secondary support mechanism for the spud/spar barges. The anchor will be positioned upstream and shoreward of the barges and attached to the upstream spud barge by a chain. The anchor will be lowered by crane and securely set into the substrate. Each anchor will have a footprint of approximately 33 square feet, resulting in a total area of impact to the river bottom of 198 square feet. The anchor chain will then be extended to the spud barge with sufficient slack to accommodate vertical movement of the barge. Each chain will be a minimum of two inches in diameter and approximately 270 feet long. No onshore work will be required during anchor installation, and all work will be completed from the river.

Barges will be temporarily fleeted in the fleeting areas during assembly and disassembly of barge tows. Barges will be delivered to and retrieved from the fleeting areas on a daily basis. Barges that are being transferred from one tow to another tow will typically enter and leave the fleeting area within a 24-hour period. Barges awaiting transport to a separate facility for loading, unloading, or repair may be fleeted for longer periods, with an estimated average fleeting period of two to three days. Navigational delays, such as lock closures, low water levels, or inclement weather, may result in longer barge fleeting periods. Although each fleeting area will be capable of holding up to 72 barges (including the spud and spar barges), the fleeting areas will rarely be at full capacity due to the continuous movement of barges in and out. If a fleeting area does reach capacity, it would likely be the result of an unforeseen event and be expected to last for a short duration.

Fleeted barges will be temporarily moored to the spud/spar barges or other fleeted barges. Barges will be arranged to maximize the assembly and disassembly of barge tows; however, fleeting will generally begin in the upstream portion of the fleeting area and continue downstream or riverward. No barges will be fleeted on the shoreward side of the spud/spar barges, and no fleeting operations will occur onshore.

The design and location of the fleeting areas were selected to allow barges to be fleeted offshore and prevent barges from hitting or resting on the river bottom. The location of the fleeting facility was based on the 302-foot normal pool elevation of the Olmsted Locks and Dam. Based on this elevation, the fleeting areas will be located in water of sufficient depth to keep barges afloat and avoid grounding, regardless of draft. The spud and spar barges will be empty and draft two feet or less. River bottom elevations at the spud/spar barge locations range from 276 to 295 feet, with an average elevation of 285 feet. Based on the normal pool elevation of 302 feet, water depths at these locations range from seven to 26 feet and average 17 feet. As a result, a minimum of five feet will be maintained between the hulls of the spud/spar barges and the river bottom at the normal pool elevation of 302 feet documented for the Olmsted Pool of the Ohio River.

A water level below 302 feet could result in the spud and spar barges hitting or resting on the river bottom; however, the water level in the Olmsted Pool has remained at or above 302 feet the majority of the time since operation of the renovated Olmsted Locks and Dam began in August 2018. Data from U.S. Geological Survey Gage 03611000, located at Paducah, Kentucky across the river from the upstream extent of the proposed fleeting facility, shows that the river was at or above the normal pool elevation of 302 feet on 582 days out of 731 days (80%) between August 1, 2018 and August 31, 2020.

The draft of fledged barges will vary based on load, with empty barges drafting two feet or less and fully loaded barges drafting up to 12 feet. Drafts of fledged barges are controlled by managing loads based on river conditions, dam draft restrictions, and travel routes. Barge draft will be used to help determine the position of barges in the fleeting areas and ensure that barges are not placed in areas where they may hit or rest on the bottom. During periods when water levels are below normal pool, barge fleeting will be adjusted accordingly to prevent fledged barges from hitting or resting on the river bottom.

Barge loads will be secured to prevent materials from entering the river during fleeting maneuvers. Materials will not be loaded or unloaded from barges in the fleeting areas in the regular course of business. In emergency situations, fledged barges may need to be lightered or transloaded to prevent sinking. Some fledged barges will be tank barges, which contain engine-driven pumps or other mechanisms that require fuel, oil, hydraulic fluid, or other potentially hazardous materials that could leak or spill. Ingram has appropriate spill mitigation procedures in place, including a U.S. Coast Guard-approved Vessel Response Plan, and strictly adheres to these procedures. Barges may be cleaned and repaired in the fleeting areas at times, but these activities will not occur on a daily basis. Cleaning in the fleeting areas will be limited to barges carrying non-hazardous dry cargo only, and cleaning products will be prevented from entering the river. Repairs will be performed in a manner that avoids the input of contaminants and materials into the river. All residual products from the cleaning and repair processes will be collected and removed to ensure that no contaminants enter the river. In addition, barge cleaning and repair will be similar to current practices occurring along the river.

Tow boats will operate in the fleeting areas on a daily basis. Large tow boats used during barge transport will travel to the fleeting areas to disassemble their barge tows and assemble new tows for transport. After landing, smaller tugboats will disassemble and assemble the barge tows and maneuver barges within the fleeting areas. Large tow boats have engines up to 10,500 horsepower (hp), with a maximum draft of approximately 10 feet. The smaller tugboats typically have engines up to 2,000 hp and a maximum draft of approximately nine feet. Barge fleeting is controlled, close-quarters work and requires slow, precise movements to properly position the barges without damaging them, the boats, or the spud/spar

barges. Tow boats and tugboats will be operating well below their speed and engine capacities, with an estimated operating speed of approximately two miles per hour or less. Boats will operate in water with sufficient depth to prevent their hulls or propellers from striking the bottom to avoid damage to the boats and river substrate. All boats used in the fleeting areas will have propellers that are fixed horizontally, and propeller wash will be directed horizontally instead of downward towards the river bottom. Propeller wash is the disturbed mass of water pushed aft (or fore when the propeller is in reverse) by the boat propeller. Propeller wash will also be directed away from the shoreline and shallow areas to the maximum extent practicable. Tow boats and tugboats will be driven to the fleeting facility as needed and will not be stored in the fleeting areas.

A Facility Operation Plan will also be implemented for all activities in the fleeting facility. The plan outlines the practices necessary to fleet barges in a safe and efficient manner and provides guidance and operating procedures for barge mooring and fleeting during various operating conditions. The plan also includes monitoring and maintenance protocols for the fleeting facility and emergency procedures in the event of a fleet breakaway. The emergency procedures include a Vessel Response Plan that outlines response procedures for specific incidents, including spill mitigation. The Facility Operating Plan will be posted in HELM, a computer system utilized to house the Ingram Barge Company Safety Management System and Vessel Response Plan and will be accessible to Ingram vessel crewmembers at all times.

All proposed activities may result in direct burial or crushing of, or sedimentation disturbance, water quality degradation to Fat Pocketbook, Orangefoot Pimpleback, Pink Mucket, Sheepnose, Rabbitsfoot, Ebonyshell, Elephantear, Ohio Pigtoe, Spike, Butterfly, Monkeyface, and Purple Wartyback mussels, and/or may result in indirect impact due to noise and vibration that may disperse the host fish of mussel glochidia, potentially decreasing reproductive success of the species.

Total estimated area of impact within species habitat for the immediately proposed actions is **69.42 acres**. The Department concurs that the take of mussels that could result from the immediately proposed project is not the purpose of Ingram'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:

Proposed avoidance, minimization and mitigation were included in Ingram's conservation plan.

To meet the "maximum extent practicable" standard, additional minimization and/or mitigation measures may be required beyond those proposed by Ingram,

based on the life history needs of Fat Pocketbook, Orangefoot Pimpleback, Pink Mucket, Sheepnose, Rabbitsfoot, Ebonyshell, Elephantear, Ohio Pigtoe, Spike, Butterfly, Monkeyface, and Purple Wartyback mussels. **All required minimization and mitigation measures are presented under the Authorization section below.**

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

Ingram states that they are responsible for the implementation and operation of the barge fleeting facility. Ingram commits to the protection of the mussel species and assures that mussel relocation, mitigation, and monitoring surveys will be funded by them.

The Department accepts this provision as assurance that adequate funding will be available to carry out the terms 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 is a part, or the habitat essential to the species' existence in Illinois.

Fat Pocketbook (*Potamilus capax*) is a Federally-endangered and Illinois state-endangered mussel species.

Habitat: Fat Pocketbook have been found in sand, mud, and fine gravel substrates in flowing water. Tolerance has been found to depositional areas that other mussels would not inhabit. These areas include man-made ditches, existing bayous, sloughs, and streams.

Reproduction: The Fat Pocketbook is a long-term brooder, with females retaining glochidia in their gills over winter and releasing them in the spring. Glochidia are released and temporarily parasitize a host fish. The only known host fish for Fat Pocketbook is the freshwater drum

Population: Fat Pocketbook populations are declining due to maintenance dredging, dam construction activities, habitat degradation and pollution. They are also being impacted by non-native zebra mussels attaching themselves to the shell of Fat Pocketbook.

Range in Illinois: In Illinois, Fat Pocketbook was formerly present in the upper Mississippi River and is now presumed extirpated. They are presently found in the Wabash and Ohio Rivers within Illinois. There are currently 24 extant Element Occurrence Records for Fat Pocketbook in the Illinois Natural Heritage Database. The species has been observed in six (6) of 102 Illinois counties, including Gallatin, Hardin, Massac, Pulaski, Wabash, and White.

Incidental Take Authorizations: The Department has three (3) previously issued or pending Incidental Take Authorizations for Fat Pocketbook. Past projects have

included bridges and maintenance dredging. This is the third authorization for Fat Pocketbook in the Ohio River, and the second in Massac County.

Orangefoot Pimpleback (*Plethobasus cooperianus*) is a Federally-endangered and Illinois state-endangered mussel species.

Habitat: Orangefoot Pimpleback are found in medium to large rivers with sand, gravel, and cobble substrates in riffles and shoals in deep water with steady currents, as well as some shallower shoals and riffles.

Reproduction: The glochidial host is unknown.

Population: Threats to the species include zebra mussels, pollution, lowered dissolved oxygen levels, development, stream channelization, dredging, impoundment, and siltation.

Range in Illinois: There are currently 2 extant Element Occurrence Records for Orangefoot Pimpleback in the Illinois Natural Heritage Database. The species has been observed in two (2) of 102 Illinois counties, including Massac and Pulaski.

Incidental Take Authorizations: This is the first Incidental Take Authorization issued or pending for Orangefoot Pimpleback.

Pink Mucket (*Lampsilis abrupta*) is a Federally-endangered and Illinois state-endangered mussel species.

Habitat: Large rivers with fast-flowing waters, although Pink Mucket can also survive and reproduce in impoundments with river-like conditions. Found in water with strong currents, rocky or boulder substrates, with depths of up to 1 m, but also in deeper water with slower currents and sand and gravel substrates.

Reproduction: Pink Mucket are long-term brooders becoming gravid in August. Glochidia host fish include sauger, freshwater drum, largemouth bass, smallmouth bass, spotted bass, and walleye. Largemouth bass in the laboratory show acquired resistance to infection with glochidia after a number of successful infections.

Population: There has been a sharp decline in populations of Pink Mucket, and the remaining populations in interior US river basins of the Ohio, Mississippi, Tennessee, and Cumberland have very few live individuals remaining. The threats to this species include habitat modification, declining water quality, past overharvest by the commercial mussel industry, and invasive species such as the zebra mussel.

Range in Illinois: Possibly extirpated from Illinois Rivers. There are currently zero (0) extant Element Occurrence Records for Pink Mucket in the Illinois Natural Heritage Database. The species has been observed in zero (0) Illinois Counties. There are also zero (0) historic Element Occurrence Records.

Incidental Take Authorizations: This is the first Incidental Take Authorization issued for Pink Mucket.

Sheepnose (*Plethobasus cyphus*) is a Federally-endangered and Illinois state-endangered mussel species.

Habitat: The species is known to inhabit medium to large rivers in shallow areas of moderate to swift current. It inhabits gravel or gravel mixed with sand, but has also been found in areas of mud, cobble, and boulders.

Reproduction: Sheepnose are short-term brooders, with reproduction occurring between May and July. Glochidia are released in conglomerates that mimic food organisms of fish, so that they are eaten and glochidia can gain access to host fish. Sauger are confirmed host fish for Sheepnose, but there are other unconfirmed species that could potentially be host fish: fathead minnow, creek chub, central stoneroller, and brook stickleback.

Population: Sheepnose are declining in today's rivers due to the destruction of habitat through stream channelization, maintenance, and dam construction. Low dissolved oxygen levels, point and non-point source pollution are an ongoing threat to Sheepnose.

Range in Illinois: The species has been found in the Mississippi, Rock, Ohio, Wabash, Kaskaskia, and Kankakee Rivers. They have been observed in five (5) of 102 Illinois counties, including Massac, Pulaski, Rock Island, Shelby, and Will Counties. There are currently eight (8) extant Element Occurrence Records for Sheepnose in the Illinois Natural Heritage Database.

Incidental Take Authorizations: The Department has eleven (11) pending or issued Incidental Take Authorizations for Sheepnose. Types of projects include a bridge installation, installation of a high-speed railway, water withdrawal, dolphin installation, and pipeline maintenance. Ingram's project is the first authorization for the taking of Sheepnose in Massac County, and the Ohio River.

Rabbitsfoot (*Quadrula cylindrica cylindrica*) is a Federally-threatened and Illinois state-endangered mussel species.

Habitat: Typical habitat for Rabbitsfoot mussels is small to medium rivers with moderate to swift currents, and in smaller streams it can be found in bars or gravel and cobble near the fast current. In medium to larger rivers, the preferred habitat is gravel. Individuals have been found in up to 3m of water. However, this mussel does not position itself in the substrate like most mussels, so individuals may be swept away in strong currents.

Reproduction: Rabbitsfoot is likely a short-term brooder, and likely gravid May to July. Host fish include whitetail shiner, spotfin shiner, and bigeye chub.

Population: Historically found in the Great Lakes and Mississippi River basins from 137 streams in 15 states. Rabbitsfoot populations are considered to be extant in 46 streams in 13 states and 5 Service regions including: lower Great Lakes sub-basin, Ohio River system, Cumberland River system, Tennessee River system, lower Mississippi River sub-basin, White River system, Arkansas River system, Red River system; in Alabama, Arkansas, Illinois, Indiana, Kansas, Kentucky, Louisiana, Mississippi, Ohio, Oklahoma, Pennsylvania, and Tennessee, and

perhaps Virginia. Populations are in decline due to habitat modification and destruction, including sedimentation, channelization, impoundment, and degraded water quality.

Range in Illinois: There are currently three (3) extant Element Occurrence Records for Rabbitsfoot in the Illinois Natural Heritage Database. The species has been observed in two (2) of 102 Illinois counties, including Massac and Vermilion Counties.

Incidental Take Authorizations: This is the first Incidental Take Authorization for Rabbitsfoot in the State of Illinois.

Ebonyshell (*Fusconaia ebena*) is an Illinois state-endangered mussel species.

Habitat: The species is known to inhabit large rivers in areas of swift current. They favor areas with stable sand or gravel substrates.

Reproduction: Ebonyshell are short-term brooders. Reproduction occurs from May to early fall, after which glochidia are released. Ebonyshell host fish include skipjack herring, largemouth bass, white crappie, and black crappie.

Population: Ebonyshell were historically the most abundant mussel species in the Upper Mississippi River, but populations have declined dramatically over the past century. One cause for the decline of Ebonyshell was their pearly-white interior shell that was highly prized by button-makers, leading to overharvest.

Range in Illinois: Ebonyshell have been found in the Mississippi, Illinois, Ohio, Wabash, and Little Wabash Rivers. There are currently 14 extant Element Occurrence Records for Ebonyshell in the Illinois Natural Heritage Database. The species has been observed in twelve (12) of 102 Illinois counties.

Incidental Take Authorizations: The Department has six (6) pending or issued Incidental Take Authorizations for Ebonyshell. Types of projects include bridge replacement, dolphin installation, and dredging. Three (3) of the issued or pending authorizations have been for work on the Ohio River. This is the second authorization for the taking of Ebonyshell in Massac County.

Elephant-ear (*Elliptio crassidens*) is an Illinois state-endangered mussel species.

Habitat: Elephantear mussels are found in large streams and rivers., The substrate for these mussels may be mud, sand, gravel, and rocks in moderate to swift currents.

Reproduction: Elephantear are short-term brooders. However, reproduction, therefore recruitment, is low in most of the rivers where populations are found. Skipjack herring serve as the primary host fish for glochidia.

Population: Elephantear mussels are known from the Mississippi and Ohio Rivers, and more widely in the Eastern United States, excluding New England. Unlike other species, the shell is not white, so it was not commercially harvested for pearl buttons. Environmental pressures that have decreased the species range

include habitat destruction through impoundments, channelization, and dredging, siltation, and chemical pollution.

Range in Illinois: Elephantear mussels are found occasionally in the Wabash and Ohio Rivers, in 6 of 102 counties: Lawrence, Massac, Peoria, Pulaski, Tazewell, and Wabash. There are currently 11 extant Element Occurrence Records for Elephantear mussels in the Illinois Natural Heritage Database.

Incidental Take Authorizations: The Department has two (2) pending or issued Incidental Take Authorizations for Elephantear. The nearest Incidental Take Authorization is located 56 river miles upstream in Hardin County for a project involving dredging.

Ohio Pigtoe (*Pleurobema cordatum*) is an Illinois state-endangered mussel species.

Habitat: Ohio Pigtoe has a preferred habitat in large rivers, with tolerance for some reservoir environments. In rivers, populations of Ohio Pigtoe can be found above riffles in heterogenous gravel, cobble, and boulder substrates, and in deeper flowing waters in mud, sand, or gravel. When found in a reservoir, the habitat is dam tailwaters or overbanks.

Reproduction: Ohio Pigtoe are short-term brooders. Reproduction occurs from April to August, after which glochidia are released. Host fish for Ohio Pigtoe include Rosefin Shiner, Creek Chub, Guppy, and Brook Stickleback.

Population: Ohio Pigtoe have become rare in occurrence and density. The species was previously known from the upper Mississippi, and St. Lawrence River. However, it is localized in the Ohio, Muskingum, Green, Tennessee, and Cumberland Rivers, and extirpated from the Wabash River, and other tributaries of the Ohio River. The decline has been attributed to pollution, alteration to river channels including impoundment and siltation, and commercial harvest of shells.

Range in Illinois: Ohio Pigtoe mussels are found occasionally in the Wabash and Ohio Rivers, in three (3) of 102 counties: Hancock, Massac, and Pulaski. There are currently 4 extant Element Occurrence Records for Ohio Pigtoe mussels in the Illinois Natural Heritage Database.

Incidental Take Authorizations: The Department has two (2) pending or issued Incidental Take Authorizations for Ohio Pigtoe. The nearest Incidental Take Authorization is located 56 river miles upstream in Hardin County for a project involving dredging.

Spike (*Eurynia dilatata*) is an Illinois state-endangered mussel species.

Habitat: The species is found in small to large rivers with sand and gravel substrates. They are occasionally found in reservoirs and lakes, usually associated with outlet habitats dominated by swift currents.

Reproduction: Spike are short-term brooders. Females brood their young in their gills from May through August before releasing glochidia. Glochidia are released and temporarily parasitize a host fish. Spike glochidial host fish include gizzard shad, flathead catfish, white crappie, black crappie, and yellow perch.

Population: Spike populations are declining due to widespread degradation of habitat throughout its range. Dams, channelization and dredging can also impact glochidial host fish. They are also prone to impacts caused by the invasive zebra mussel.

Range in Illinois: In Illinois, spike have been found in the Mississippi, Illinois, Kaskaskia, Kankakee, Fox, Sangamon, Wabash, and Little Wabash River basins in 17 of 102 counties. There are currently 34 extant Element Occurrence Records for spike in the Illinois Natural Heritage Database.

Incidental Take Authorizations: There have been seventeen (17) previously issued or currently pending Incidental Take Authorizations for Spike in Illinois. Previous projects include bridge replacements, pipeline installation, water treatment outfall, water withdrawal, and diffuser installation. This is the first authorization for the taking of spike in Massac County, and the second in the Ohio River.

Butterfly (*Ellipsaria lineolata*) is an Illinois state-threatened mussel species.

Habitat: They are found in large rivers in areas with moderate to swift currents. They favor substrates of coarse sand and gravel.

Reproduction: Butterfly mussels are long-term brooders. Females retain developing glochidia in their gills from August until the following July. Glochidia are released and temporarily parasitize a host fish. Butterfly glochidial host fish include freshwater drum, green sunfish, and sauger.

Population: Butterfly mussel populations are shrinking due to a decline in habitat conditions associated with river/water management, impacts from the invasive zebra mussel, and from overharvest caused by the button and pearl industries.

Range in Illinois: In Illinois, Butterfly mussels have been found in the Mississippi and Ohio Rivers, in 12 of 102 counties. There are currently 28 extant Element Occurrence Records for butterfly mussels in the Illinois Natural Heritage Database.

Incidental Take Authorizations: The Department has fifteen (15) previously issued or pending Incidental Take Authorizations for Butterfly mussels. Types of projects included dredging, construction of offshore structures, bridge removal and replacement, riprap installation, and boat dock installation. This is the first authorization for the taking of butterfly in Massac County, and the second in the Ohio River.

Monkeyface (*Quadrula metanevra*) is an Illinois state-threatened mussel species.

Habitat: Monkeyface are predominately found in medium to large rivers that have gravel or mixed sand and gravel substrates.

Distribution: This species is widespread in the United States. Populations can be found from Kansas, Nebraska, and Oklahoma east to West Virginia and Georgia, and range from Minnesota south to the Gulf of Mexico in Louisiana, Mississippi, and Alabama.

Reproduction: Monkeyface is a short-term brooder, with females retaining glochidia in their gills from late March to July. Glochidia host fish include Spottfin Shiner, Bluntnose Minnow, Eastern Blacknose Dace, and Creek Chub.

Population: Monkeyface populations are on the decline due to siltation, habitat loss, desiccation during droughts, pollution, impoundment and channelization, species introductions including Zebra Mussels, and increased water temperatures.

Range in Illinois: Monkeyface mussels are found in 10 drainages, but healthy populations are only found in the Mississippi River and Kankakee River. Monkeyface have been reported in 15 of 102 Illinois counties. There are currently 30 extant Element Occurrence Records for Monkeyface mussel.

Incidental Take Authorizations: This is the second Incidental Take Authorization issued or pending for Monkeyface following its addition to the Illinois Threatened and Endangered Species List in May 2020. The other project was to add riprap under a bridge around the piers.

Purple Wartyback (*Cyclonaias tuberculata*) is an Illinois state-threatened mussel species.

Habitat: The species is predominantly found in small to medium-sized streams and the main headwaters of large rivers. The species prefers gravel or mud substrates.

Reproduction: Purple Wartyback is a short-term brooder, with females retaining glochidia in their gills from May to late August. Glochidia are released and temporarily parasitize a host fish. Purple wartyback glochidial host fish include black bullhead, yellow bullhead, channel catfish, and flathead catfish.

Population: Purple Wartyback populations are jeopardized by habitat degradation and pollution. They are also being impacted by infestations of the non-native zebra mussel.

Range in Illinois: In Illinois, Purple Wartyback are found in the Kankakee, Vermillion, Ohio, Fox, and Rock River basins. They have been found in nine (9) of 102 Illinois counties, including Champaign, Grundy, Iroquois, Kankakee, Massac, Pulaski, Rock Island, Vermilion, and Will Counties. There are currently 37 extant Element Occurrence Records for purple wartyback mussels in the Illinois Natural Heritage Database.

Incidental Take Authorizations: The Department has nineteen (19) previously issued or pending Incidental Take Authorizations for Purple Wartyback. Types of projects included bridge repair or installation, dredging, pipeline maintenance, and high-speed railway construction. This is the first authorization for the taking of Purple Wartyback in Massac County, and the second in the Ohio River.

Based on the amount of habitat impacted by this project, the number of known occurrences of Fat Pocketbook, Orangefoot Pimpleback, Pink Mucket, Sheepnose, Rabbitsfoot, Ebonyshell, Elephantear, Ohio Pigtoe, Spike, Butterfly, Monkeyface, and Purple Wartyback mussels in Illinois, an assessment of the potential effect of this project footprint, the conservation methods included in this authorization for take and the conservation plan, 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 these projects will not reduce the likelihood of survival or recovery of the 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.

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

Additional measures are listed below under "Authorization". This authorization is, by definition, subject to those terms and conditions and the signature of a representative from Ingram indicates their 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 Ingram's request for authorization of incidental take was published in the *Breeze Courier* (official state newspaper) on February 4, 2021, and in *The Metropolis Planet* on February 4, 11, 18, and 25, 2021. A copy of the conservation plan was deposited at the Brookport City Hall, where it was available for public review. The deadline for public comment was March 25, 2021. No comments were received from the public.

Authorization

It is the determination of the Department that the measures to be implemented by Ingram will adequately minimize and mitigate the anticipated taking of Fat Pocketbook, Orangefoot Pimpleback, Pink Mucket, Sheepnose, Rabbitsfoot, Ebonyshell, Elephantear, Ohio Pigtoe, Spike, Butterfly, Monkeyface, and Purple Wartyback mussels associated with the construction of a barge mooring facility in Massac County, Illinois. Further the Department has concluded that the taking authorized herein will not reduce the likelihood of survival or recovery of the mussel 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. Additional listed aquatic species may inhabit the Ohio River, this agreement does not authorize take of any species except Fat Pocketbook, Orangefoot Pimpleback, Pink Mucket, Sheepnose, Rabbitsfoot, Ebonyshell, Elephantear, Ohio Pigtoe, Butterfly, Monkeyface, Purple Wartyback, and Spike mussels.

All terms and conditions included in the aforementioned Conservation Plan submitted by Ingram 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 Ingram in the conservation plan:

1. This authorization is effective upon the signature of the Department and shall remain in effect for a period of **ten (10) 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 Ingram has failed to comply with any of these terms and conditions or has been responsible for the taking of Fat Pocketbook, Orangefoot Pimpleback, Pink Mucket, Sheepnose, Rabbitsfoot, Ebonyshell, Elephantear, Ohio Pigtoe, Spike, Butterfly, Monkeyface, and Purple Wartyback mussels beyond that which is incidental to construction of a permanent barge mooring facility near Brookport between Ohio River Miles 935 and 937.4 in Massac County, Illinois.

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

Any substantive changes, including but not limited to a change in the project footprint or a change in the State-listed 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 may only be transferred upon approval and written authorization by the Department.
4. Notification to all on-site construction personnel shall be provided on the sensitive biological resources in the area, the identification of Fat Pocketbook, Orangefoot Pimpleback, Pink Mucket, Sheepnose, Rabbitsfoot, Ebonyshell, Elephantear, Ohio Pigtoe, Spike, Butterfly, Monkeyface, and Purple Wartyback mussels, regulations protecting the species, where the species might be found, avoidance areas, travel restrictions for equipment, how to report sightings or incidents that may involve take, the importance of avoiding take of the species, and response protocol if the species are found. **Ingram shall submit a copy of the education materials to the Department.**
5. The Department reserves the right of entry by its staff or representatives to inspect potential habitat and species management practices. Department staff must be

accompanied by an employee of Ingram, and are required to adhere to Ingram's health and safety requirements.

6. Biological consultants employed by Ingram shall hold the necessary permits for work with non-listed and listed species; these include an Illinois Department of Natural Resources (IDNR) Scientific Collection Permit as authorized under 17 Illinois Administrative Code 520, and an IDNR Endangered Species Permit as authorized under 17 Illinois Administrative Code 1070.
7. The relocation of non-listed aquatic life is hereby authorized by the Department with signature of this agreement per the Illinois Fish and Aquatic Life Code (515 ILCS 5/1-150).
8. Ingram shall notify the Department's Endangered Species Program by email correspondence of construction commencement and completion of each project within the permit action area. A **project status report** shall be submitted to the Department within **90 days** following completion of each project summarizing the implementation of minimization and mitigation measures and evaluating the effectiveness of those measures and shall include a project photo log. The report shall also include a map and GPS coordinates of any listed species found within the project footprint, description of any injuries or mortalities, and the disposition of any individuals that were injured or killed.
9. Any discoveries of additional State-listed species beyond those identified in this agreement **halts work** and shall be reported to the Department within 48 hours accompanied by location information (photograph, map, and GPS coordinates).
10. Ingram shall conduct, or cause to be conducted, the following pre-construction or construction efforts:
 - a. No cofferdams or temporary causeways shall be installed.
 - b. All in-stream work shall be conducted from barges, including the use of cranes and other heavy equipment.
 - c. No equipment shall be placed in the stream except for the installation barge spuds and anchors (e.g., no tracks of equipment shall enter the water).
 - i. Barge spuds shall not use percussive pile driving.
 - ii. Spar barge anchors shall be lowered by a crane.
 - iii. The crane shall not release the anchor until it is resting on the riverbed.
11. Ingram shall conduct, or cause to be conducted, the following during operations:
 - a. No fleeting operations shall occur onshore.
 - b. Barges shall be secured while in the fleeting area unless they are being rearranged by tow boat.
 - c. Barges containing hazardous cargo shall not be cleaned in the fleeting area. All cleaning products and residues used on barges shall not be discharged to the Ohio River.

- d. Towboats and tugboats must adhere to the Facility Operation Plan. Towboats and tugboats will operate at speeds of 2 mph or less when assembling/disassembling barge tows and moving barges within the fleeting areas.
12. Ingram shall conduct, or cause to be conducted, a thorough pre-construction relocation effort for freshwater mussels within the project area prior to construction commencement:
- a. All freshwater mussels (listed and non-listed) shall be hand collected from the 5ft² area plus a circular 10-meter buffer at each proposed spud pile location.
 - b. The area shall be searched at a rate no greater than 1m² per minute.
 - c. Those conducting the search must be qualified at accurate identification of freshwater mussel species.
 - d. All native freshwater mussels found during this search shall be relocated to suitable habitat pre-approved by the Department and FWS.
 - e. Zebra mussels shall be removed from native freshwater mussel shells to the extent practicable and disposed of on dry land or in trash receptacles to desiccate. It is unlawful to release this injurious species back to aquatic habitat in Illinois per 17 Ill. Adm. Code 805.30(b). Equipment decontamination measures shall be deployed prior to entering the waterway, if applicable, and upon project completion to prevent translocation of zebra mussels into new waterbodies.
 - f. A survey of the relocation site shall occur prior to placement of relocated mussels to establish baseline conditions to ensure suitability. Ingram will contact the Department by phone or email regarding the suitability of the relocation site and to gain approval prior to relocation.
 - g. The relocation site must be at least 300 meters downstream of the proposed fleeting facility. Listed mussels shall be hand-placed into the substrate at least 30m from the right descending (north or Illinois) bank of the Ohio River. Non-listed mussels must be relocated to the same downstream area but may be broadcast over the substrate.
 - h. The search shall be conducted during biologically suitable mussel relocation periods. The mussel relocation shall occur within 60 days prior to the onset of construction.
 - i. Mussels shall not be relocated when air temperatures are at or below 32°F or at or above 95°F, nor when water temperatures are at or below 59°F. All mussels will be held in mesh bags suspended in the river or in containers of water changed every hour (every half-hour when air temperatures are at or above 87°F. Water in containers shall be taken from the river where the mussels were collected. No mussels shall be held for more than 3 hours before being returned to suitable habitat in the river.
 - j. All listed mussels shall receive a unique marking to aid in identification of these individuals during monitoring. In addition, the non-listed mussels relocated shall be etched or glitter-glued, such that they can be used to estimate survivorship of relocated mussels in later surveys.

- k. **A report including, but not limited to, the survey methodology utilized (for search and recipient sites), water temperature, qualitative habitat description, the species and abundance of mussels relocated, length, sex (if discernable), and growth rings count (i.e. an approximation of age) of all individuals of listed species and the first 100 individuals of non-listed species, the unique identification of each marked individual, and a map of the search areas and recipient site shall be provided to the Department within 90 days of completion of the mussel relocation.**
13. Ingram shall conduct, or cause to be conducted, a thorough survey for mussels within the project action area and the relocation site and their respective buffer areas, in Year 5 following construction completion.
- a. A thorough survey for freshwater mussels, comprised of semi-quantitative searches, within the spud pile installation areas and the relocation site.
- b. Within each spud pile buffer 7 randomly selected 1m² cells will be searched. Within the relocation site a total of 260m or 10% of the area shall be searched using randomly selected transects perpendicular from the bank.
- c. **A report including, but not limited to, the survey methodology utilized, water temperature, habitat structure, the species and numbers of mussels located (noting any marked individuals at the relocation site and/or buffer), length, sex (if discernable), the number of growth rings (i.e. an approximation of age), transect or cell of origin, the unique identification marker of each relocated mussel observed, an analysis of mussel survival rates at the relocation site, and a map of the species locations and areas surveyed shall be provided to the Department within 90 days of completion of the survey.**
14. Mitigation to the maximum extent practicable is required by the Act. Mitigation requirements for this authorization are as follows:
- a. Ingram shall provide funding in the amount of **\$53,472** to the Kentucky Waterways Alliance's Kentucky Aquatic Resources Fund to be earmarked to bring conservation benefit of the twelve species of mussels.
- b. At this time, the Department believes that the specified mitigation sufficiently meets the "maximum extent practicable" as defined by the Act for the term of this authorization.
- c. The donation shall be provided **within 90 days of execution of this agreement, or prior to construction of the facility, whichever occurs first.** Mitigation payments are nonrefundable, including events of revocation or termination.

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

15. All reports, notifications, and other project documentation 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.ITAcordinator@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.

16. The Ingram official identified below is authorized to execute this agreement. Execution by Ingram indicates acceptance of all terms and conditions described in this authorization.
17. The execution of this agreement does not waive or excuse the responsibilities of Ingram 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:

Christopher L Young
Mr. Christopher L. Young, Director
Office of Resource Conservation

June 23, 2021
Date

For Ingram Barge Company:

Oscar Harrell III
Mr. Oscar Harrell
Vice President of Operations, Performance, and
Development

6/22/2021
Date