

Authorization for Incidental Take and Implementing Agreement

Pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/5.5) Ingram Materials Company's (Ingram) authorization for the incidental take of the Fat Pocketbook mussel (*Potamilus capax*) – Listed by Illinois and the USFWS and the Ebonyshell mussel (*Fusconaia ebena*) – Listed by Illinois in Hardin, Massac, and Pope Counties, Illinois (as described/shown in the conservation plan received by the Department on 21 November 2006) is hereby granted, subject to the terms and conditions described in the attached Authorization and Implementing Agreement. The Illinois Department of Natural Resources has determined that this authorized take is incidental to commercial sand and gravel dredging operations (by Ingram), in Hardin, Massac, and Pope Counties, Illinois.

Procedural History

This authorization addresses issues related to threatened and endangered (T&E) species in response to a Section 10/404 permit application submitted by the Ingram Materials Company (Ingram) for the dredging of sand and gravel for commercial purposes at various locations on the Ohio River.

As required by the pending USACOE Section 10/404 permit, Ingram applied for an individual Section 401 Water Quality Certification from the Illinois Environmental Protection Agency on September 19, 2006. Ingram's total requested permit coverage area is Ohio River Miles 892.5 to 894.5 and 923.0 to 930.0 which are within the Counties of Hardin, Massac, and Pope in the State of Illinois. Please note that the permit coverage area has been revised since September 19, 2006 as requested by the agencies to encompass the entire physical locations of Cottonwood and Irish Jimmie's Bars.

IDNR staff requested that a Conservation Plan (CP) be prepared in accordance with Illinois Administrative Code, Chapter I, Section 1080.10. A telephone conversation was held between Conestoga-Rovers & Associates (CRA) aquatic biologist Don Knorr and IDNR on November 3, 2006 to discuss the CP. Ingram is focusing exclusively on Ohio River Miles 892.5 to 894.5.

The following species and locations were identified as species of concern and areas of concern by the IDNR:

Ohio River, Cottonwood Bar, River Miles 923.0 to 930.0

Butterfly mussel (*Ellipsaria lineolata*) – Listed by Illinois
 Ebonyshell mussel (*Fusconaia ebena*) – Listed by Illinois
 Least tern (*Sterna antillarum*) – Listed by Illinois and USFWS
 Redspotted sunfish (*Lepomis miniatus*) – Listed by Illinois

Ohio River, Irish Jimmie's Bar, River Miles 892.5 to 894.5

Fat Pocketbook mussel (*Potamilus capax*) – Listed by Illinois and USFWS
 Ebonyshell mussel (*Fusconaia ebena*) – Listed by Illinois

Both the Cottonwood and Irish Jimmie's Bars are within the area of proposed dredging. The Cottonwood Bar has been a major location of Ingram's previous dredging, staging, fleeting, and river traffic for the last 35 years. Accordingly, IDNR has previously agreed with Ingram's position that there is no realistic possibility of T&E species being present in the area around Cottonwood. Therefore, Cottonwood has been taken out of consideration for the possible presence of T&E species, and is not further discussed in this Authorization. However, if any NEW sites previously undredged by Ingram (or any other company for that matter) anywhere within the Cottonwood Bar reach (River Miles 923.0 to 930.0) will be impacted by this project, as well as historic sites inactive for five (5) years or more, these areas must be surveyed for mussels prior to any construction and mussels translocated per the same guidelines listed in this authorization. Any and all such surveys and/or translocations shall be reported to Joseph Kath of the Illinois DNR (Springfield, Illinois) within 45 days of completion.

Irish Jimmie's Bar is a reserve area where dredging is infrequent; this area is the basis of this Authorization. The Authorization focuses on the two listed freshwater mussel species known to occur in the vicinity of Irish Jimmie's Bar.

Ingram prepared a conservation plan as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and subsequent request for authorization for incidental take of Fat Pocketbook mussel and Ebonyshell mussels were received by the Illinois Department of Natural Resources (Department) on 21 November 2006. Public notice of Ingram's request for authorization of incidental take was published in the Edwardsville Intelligencer (Official State newspaper) and the Southern Illinoisan on March 14, 2007, as well as on March 21, 2007 and March 28, 2007. Public comments on Ingram's conservation plan were accepted by the Department until Monday, April 30, 2007. No comments were received by the public during the period of March 14, 2007 through April 30, 2007.

Compliance with the Endangered Species Protection Act

The Illinois Endangered Species Protection Act includes six (6) criteria which must be met for the authorization of incidental take of an endangered or threatened species. These criteria and the Department's determination for each criteria 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 to perform commercial sand and gravel hydraulic dredging on the Ohio River (by Ingram), parts of which are within the State of Illinois. The applicable area lying within the State of Illinois occurs generally within River Miles 892.5 to 894.5. The State of Illinois boundary delineation(s) shown are based on published material of the USACOE.

All of these areas have been dredged within the past 5 years, and have been approved under a Corps Section 10/404 permit for at least 10 years. Ingram has been actively dredging on the Ohio River for the past 35 years.

The average material extraction rate is approximately 8,000 gallons per minute, for combined water and solids (slurry), potentially for 24 hours per day and 365 days per year. The average water return flow from the floating barge to the river is approximately 5,000 gallons per minute (including some waste solids), potentially for 24 hours per day and 365 days per year. The purpose of the proposed activity is to extract sand and gravel from the Ohio River for commercial sale. These products are used in the construction of roads, residential houses, commercial buildings, and other structures. Dredging activities also assist in keeping the Ohio River open to marine transportation.

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

The conservation plan prepared received by the Department on 21 November 2006 stated that freshwater mussel surveys, and subsequent relocations, would be discussed and if applicable, conducted prior to initiation of dredging operations and most likely during the spring/summer while water temperatures are at or above 50 degrees Fahrenheit.

Ingram proposes to perform a preliminary mussel survey within mineable and permitted areas around Irish Jimmie's Bar, prior to any dredging in that area. In lieu of, or in addition to, a mussel survey, Ingram can also perform sediment testing as directed by the agencies.

Prior to the initiation of dredging operations at a dredge site around Irish Jimmie's Bar, a preliminary diving survey by an approved mussel surveyor(s) will be conducted to determine if freshwater mussels are present. The areal limits of the dredging will be marked with buoys. In this manner, survey data will be collected immediately preceding dredge operations. If mussels are found they will be identified to species. If the fat pocketbook mussel (both a state and federal listed species) is found then both the U.S. Fish and Wildlife Service (USFWS) and IDNR shall be notified within 24 hours. If any other state-listed mussel species of concern is found, only the IDNR will be notified.

If listed species are found, discussions would be initiated with one or both (as appropriate) of the resource agencies on how to proceed. If only the state-listed mussels are found, discussions will be held with IDNR on where to move the mussels and the methodology to be used for the collection and relocation. Ingram will follow the appropriate methods under the direction of the approved mussel surveyor to ensure the safety of the individual animals and the success of the relocation process of the mussels. More than likely, the following mussel translocation guidelines would be followed:

All mussels observed (listed or non-listed species) are to be relocated in order to minimize impact(s). Mussel surveys will be conducted using standard survey techniques including searching by feel to methodically cover the area to be disturbed by the project (viewing boxes, wading in shallow water, SCUBA in deeper water-if applicable). All mussels found will be identified to species. Mussels will be relocated into areas of suitable habitat, in the same stream/river, preferably upstream of the construction site. Specifically, the transplant site will be

close to the collection area and have similar to better water quality and substrate. Mussel consulting staff shall have extensive experience with Midwestern mussels. Such staff shall provide the Department with a report detailing the results of all mussel surveys and relocation efforts within 60 days of completing all surveys/relocations. In summary, mussel surveys and related relocations will occur only after Department authorization and prior to any construction activities.

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

In an official correspondence to the Department dated 21 November 2006, Ingram verified that adequate funding exists to support and implement all (mitigation) activities described in the official Conservation Plan. This correspondence states that Ingram is committed to provide financial security necessary to complete, monitor, and implement appropriate and reasonable actions to ensure the success of the mitigation.

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

The Illinois Department of Natural Resources has determined that this authorized take is incidental to the commercial sand and gravel dredging operations (by Ingram), in Hardin, Massac, and Pope Counties, Illinois and will (most likely) not reduce the likelihood of the survival of state-listed threatened or endangered mussels in Illinois.

Ebonyshell mussels are listed by Illinois as threatened. The ebonyshell prefers large rivers with sand and gravel substrates. It is reported to be found at depths from 1 to 5 feet. Skipjack herring (*Alosa chrysochloris*), a migratory species, is the host fish of the mussel larva (glochidia). Restriction of the movement of this host fish has been reported to have constricted the range of this mussel.

The fat pocketbook mussel, also referred to as the pearly, is listed by Illinois as endangered. The fat pocketbook has also been designated as an endangered species pursuant to the U.S. Endangered Species Act of 1973. *P. capax* has been reported from sand and mud substrates of medium to large rivers, ranging at depths of less than six inches to more than eight feet. Historic and present records indicate that it is a riverine species that requires flowing water and stable substrate. The species does not occur in the impounded sections of rivers and is apparently quite sedentary in the substrate.

Little is known about specific environmental requirements for adults or any other life stage. Habitat of the glochidia is initially within the gills of the female, then in the water column, and finally attached to a suitable host, possibly the freshwater drum or white crappie. Habitat requirements or associations for the juvenile stage are unknown.

The relocation of all mussels encountered (both listed and non-listed) will make it unlikely that a significant number of individuals will be exposed to threats related to commercial sand and gravel dredging operations (by Ingram), in Hardin, Massac, and Pope Counties, Illinois.

As stated in the April 1996 Technical Report (working draft) titled - "Measures to minimize harm to *Lampsilis higginsii* [federally endangered Higgins Eye mussel] caused by passage of commercial navigation vessels in the upper Mississippi River" [prepared by the U.S. Army Corps of Engineers-Waterways Experiment Station]: Relocation is one of several methods that can be used to protect freshwater mussels. Relocation can be used to recolonize areas where previous populations were extirpated, to remove mussels from proposed construction sites, to boost numbers of endangered species, or to protect against high densities of the zebra mussel (*Dreissena polymorpha*). The survival of relocated mussels is closely linked to habitat quality.

Relocation sites should have the same conditions of substratum type and stability, and water velocity as the original habitat. Research from the federally endangered Higgins Eye mussel (*Lampsilis higginsii*) recovery team, under the guidance of the United States Fish and Wildlife Service, has determined that minimal mortality (<12%) and high recovery rate (>88%) were shown when aerial exposure of mussels was less than four (4) hours and when relocations were conducted in spring or autumn when air (12-18 C) and water temperature (15-23 C) were moderate.

A. Description of Activities

Ingram proposes to perform commercial sand and gravel hydraulic dredging on the Ohio River, parts of which are within the State of Illinois. The applicable area lying within the State of Illinois occurs generally within River Miles 892.5 to 894.5. The State of Illinois boundary is based on published material(s) of the USACOE.

All of these areas have been dredged within the past five (5) years, and have been approved under a Corps Section 10/404 permit for at least 10 years. Ingram has been actively dredging on the Ohio River for the past 35 years.

The average material extraction rate is approximately 8,000 gallons per minute, for combined water and solids (slurry), potentially for 24 hours per day and 365 days per year.

The average water return flow from the floating barge to the river is approximately 5,000 gallons per minute (including some waste solids), potentially for 24 hours per day and 365 days per year.

The purpose of the proposed activity is to extract sand and gravel from the Ohio River for commercial sale. These products are used in the construction of roads, residential houses, commercial buildings, and other structures. Dredging activities also assist in keeping the Ohio River open to marine transportation.

B. Adverse Effects

Species of concern (as well as non-listed species) may be harmed if they are in the vicinity of the dredging or downstream of it. Physical harm could be induced if the species are near the intake of the dredge. Potential harm may also be due to suspended solids and sedimentation of adjacent and downstream areas. Dissolved oxygen levels may also decline due to the suspended solids and the creation of isolated deep pools.

Because of these adverse effects, Ingram shall perform a preliminary mussel survey(s) within mineable and permitted areas around Irish Jimmie's Bar, prior to any dredging in that area. In lieu of, or in addition to, a mussel survey, Ingram shall also perform sediment testing as directed by the agencies.

Prior to the initiation of dredging operations at a dredge site around Irish Jimmie's Bar, a preliminary diving survey by an approved mussel surveyor shall be conducted to determine if freshwater mussels are present. The areal limits of the dredging will be marked with buoys. In this manner, survey data will be collected immediately preceding dredge operations. If mussels are found they will be identified to species. If the fat pocketbook mussel (both a state and federal listed species) is found, then both the U.S. Fish and Wildlife Service (USFWS) and IDNR will be notified within 24 hours. If any other state-listed mussel species of concern is found, only the IDNR will be notified.

If any listed species are found, discussions shall be initiated with one or both (as appropriate) of the resource agencies on how to proceed. If only state-listed mussels are found, discussions shall be held with the IDNR on where to move the mussels and the methodology to be used for the collection and relocation. Ingram shall follow the appropriate methods under the direction of the approved mussel surveyor to ensure the safety of the individual animals and the success of the relocation process of the mussels.

C. Description of Minimization and Mitigation Measures

To minimize the potential for dissolved oxygen (DO) depletion, sand and gravel will be extracted in the pattern of elongated trenches in areas of flow (where possible). This practice will minimize creating areas of deep isolated pockets that have the highest potential for DO depletion. It may be possible to orient trenches that restore flow to these isolated deep pools.

General and Special Conditions for Commercial Sand and Gravel Dredging in the Ohio River are published in the Notice of Re-Issuance of Regional General Permit No. 32 by the USACOE, Louisville District. These conditions should be identical to the pending individual USACOE Section 10/404 permit for Illinois waters. The following conditions are notable and will most likely be protective of listed species:

General Conditions:

*That the permittee (Ingram) agrees to make every reasonable effort to prosecute the work authorized in a manner so as to minimize any adverse impact of the work on fish, wildlife, and natural environmental values.

*That the permittee agrees to prosecute the work authorized in a manner so as to minimize any degradation of water quality.

*Daily operating records will be maintained by each Ingram dredge. In addition, Ingram shall conduct additional monitoring data as is reasonable and requested by IDNR and/or the USFWS.

Special Conditions:

*That irrespective of pool stage, the permittee (Ingram) shall not dredge:

- (1) Within 150 feet of the shoreline.
- (2) Within a distance of the shoreline equal to three (3) times the dredge depth when the depth exceeds 50 feet.
- (3) In an area less than 5 feet deep.
- (4) In an area less than 9 feet deep if within 1,000 feet of the shoreline.

*That the permittee shall not dredge closer than 1,500 feet upstream of any known mussel bed, nor closer than 500 feet to the side, nor within 500 feet downstream of such a bed; or in designated sensitive areas.

*That the permittee shall, on encountering uncharted mussel beds, cease all dredging in the subject area and notify the Louisville District Engineer and the Illinois DNR (Attn: Joseph Kath) of such location within 24 hours of discovery.

*That the permittee shall neither dredge nor has any attendant equipment or appurtenances, such as anchors or barges, within 1,000 feet of the shoreline of an island with less than 5 foot depth.

*That should the District Engineer become aware of any particular fish and wildlife resource areas experiencing substantial adverse impacts from dredging operations, the District Engineer and/or the Illinois DNR , reserves the right to impose any additional restrictions or eliminate specific areas from dredging permits entirely in order to preserve the integrity of these resource areas.

*That, should the District Engineer become aware of any areas experiencing critical caving bank problems, the District Engineer and/or the Illinois DNR, reserves the right to impose any additional restrictions or eliminate specific areas from dredging permits entirely in order to preserve the integrity of these areas.

D. Adaptive Management Practices

Adaptive management is a technique applied to species/habitat management projects that includes consultation between the project participants and various agencies. A beneficial event may happen unexpectedly. If so, a decision will be required on whether to capitalize on such events.

The Pittsburgh District USACOE in their environmental impact statement for dredging of the Allegheny and Ohio Rivers state that significant mussel colonies are found in shallow areas (less than 9 feet deep). The adaptive management plan proposed by the USACOE for this project consists of the following:

- 1) Limit dredging to areas greater than 9 feet depth initially.
- 2) Continue to conduct mussel surveys prior to dredging around Irish Jimmie's Bar, revisiting the methodology and decision criteria as necessary as more information is compiled.
- 3) Consider other adaptive management restrictions, as necessary, on a site-specific basis, that are warranted to avoid adverse impacts on aquatic life, such as avoidance of high quality habitats when identified.

Should state-listed species be discovered by the pre-dredge surveys, Ingram shall immediately contact the IDNR (within 24 hours - Attn: Joseph Kath). Discussions shall be held with IDNR on the relocation of the mussels to a suitable site that will not be dredged. Methodologies of the re-location efforts and assessment and selection of appropriate relocation sites shall be mutually developed and agreed upon. Ingram shall use relocation information from IDNR, other agencies, and the scientific literature to help ensure the success of the relocation effort and long-term survival of the relocated animals.

5. Any measures required under Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.40(b)], will be performed:

Additional measures are listed below under "Authorization." This authorization is, by definition, subject to those terms and conditions and official Ingram signature(s) on this authorization 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:

Ingram prepared a conservation plan as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and subsequent request for authorization for incidental take of the Fat Pocketbook mussel and Ebonyshell mussel were received by the Illinois Department of Natural Resources (Department) on 21 November 2006. Public notice of Ingram's request for authorization of incidental take was published in the Edwardsville Intelligencer (Official State newspaper) and the Southern Illinoisan on March 14, 2007, as well as on March 21, 2007 and March 28, 2007. Public comments on Ingram's conservation plan were accepted by the Department until Monday, April 30, 2007. No comments were received by the public during the period of March 14, 2007 through April 30, 2007.

Authorization

It is the determination of the Department that the measures to be implemented by Ingram will adequately minimize and mitigate for the anticipated taking (relocation) of a small number of Fat Pocketbook mussels (*Potamilus capax*) and Ebonyshell mussel (*Fusconaia ebena*) in Hardin, Massac, and Pope Counties, Illinois [associated with commercial sand and gravel dredging operations by Ingram]. The Illinois Department of Natural Resources has determined that this authorized take is incidental to commercial sand and gravel dredging operations (by Ingram), in Hardin, Massac, and Pope Counties, Illinois. Further, it is our opinion that the take (relocation) authorized herein would not diminish the likelihood of the survival of these mussels 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.

Pursuant to Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.40(b)], this authorization is issued subject to the following additional terms and conditions:

1. This authorization is effective upon signature of the Department and shall remain in effect for a period of ~~five (5) years~~ ^{ten (10) years} unless terminated pursuant to Section 5.5. of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.80].

EN(10) YEARS
JB 8/28/2007

2. Ingram shall perform a preliminary mussel survey within mineable and permitted areas around Irish Jimmie's Bar, prior to any dredging in that area. In lieu of, or in addition to, a mussel survey, Ingram shall also perform sediment testing as directed by the agencies.

Prior to the initiation of dredging operations at a dredge site around Irish Jimmie's Bar, a preliminary diving survey by an approved mussel surveyor shall be conducted to determine if freshwater mussels are present. The areal limits of the dredging will be marked with buoys. In this manner, survey data will be collected immediately preceding dredge operations. If mussels are found they will be identified to species. If the fat pocketbook mussel (both a state and federal listed species) is found then both the U.S. Fish and Wildlife Service (USFWS) and IDNR will be notified within 24 hours. If any other state-listed mussel (species of concern) is found, only the IDNR will be notified (Attn: Joseph Kath).

If any listed species are found, discussions shall be initiated with one or both (as appropriate) of the resource agencies on how to proceed. If only state-listed mussels are found, discussions shall be held with IDNR on where to move the mussels and the methodology to be used for the collection and relocation. Ingram shall follow the appropriate methods under the direction of the approved mussel surveyor to ensure the safety of the individual animals and the success of the relocation process of the mussels.

Handling of mussels shall be in compliance with any and all conditions and/or protocols included in the state and/or federal authorizations for this work. Any future relocation of mussels [to suitable habitat preferably upstream of the project site] shall be identified to species and enumerated. A report on the species and numbers of all mussels (listed and/or non-listed species) relocated and the location(s) at which they were released shall be provided to the Department within 60 days of completion of the relocation (Attn: Joseph Kath).

3. To minimize the potential for dissolved oxygen (DO) depletion, sand and gravel will be extracted in the pattern of elongated trenches in areas of flow (where possible). This practice will minimize creating areas of deep isolated pockets that have the highest potential for DO depletion. It may be possible to orient trenches that restore flow to these isolated deep pools.

4. The following conditions shall be implemented by Ingram:

*That the permittee (Ingram) agrees to make every reasonable effort to prosecute the work authorized in a manner so as to minimize any adverse impact of the work on fish, wildlife, and natural environmental values.

*That the permittee agrees to prosecute the work authorized in a manner so as to minimize any degradation of water quality.

*Daily operating records will be maintained by each Ingram dredge. In addition, Ingram shall conduct additional monitoring data as is reasonable and requested by IDNR:

- a) Limit dredging to areas greater than 9 feet depth initially.
- b) Continue to conduct mussel surveys prior to dredging around Irish Jimmie's Bar, revisiting the methodology and decision criteria as necessary as more information is compiled.
- c) Consider other adaptive management restrictions, as necessary, on a site-specific basis, that are warranted to avoid adverse impacts on aquatic life, such as avoidance of high quality habitats when identified.

5. Should the presence of state-listed species be determined by the pre-dredge surveys, Ingram shall immediately contact the IDNR (within 24 hours). Discussions shall be held with IDNR on the relocation of the mussels to a suitable site that will not be dredged. Methodologies of the relocation efforts and assessment and selection of appropriate relocation sites shall be mutually developed and agreed upon. Ingram shall use relocation information from IDNR, other agencies, and the scientific literature to help ensure the success of the relocation effort and long-term survival of the relocated animals.

6. All mussels encountered within the State of Illinois during this project shall be subject to the general U.S. Fish and Wildlife Service handling protocol for determining presence/absence of species as found in "Section H" of the attached Federal Fish and Wildlife document.

7. The effective period of this authorization may be altered by mutual agreement between Ingram and the Department.

8. This authorization may be revoked pursuant to Section 5.5 of the Act if the Department finds that Ingram has failed to comply with any of these terms and conditions and/or has been responsible for the take of any listed mussels beyond that which is incidental to commercial sand and gravel dredging operations (by Ingram), in Hardin, Massac, and Pope Counties, Illinois.

9. The Ingram official identified below is authorized to execute this agreement. Execution by Ingram indicates acceptance of all terms and conditions described in this document.

10. Please note that this Authorization does NOT allow any take what so ever of any Federally listed species, most notably the Fat Pocketbook mussel (*Potamilus capax*) – Listed by Illinois and the USFWS. Permission to take any Federally listed species must be formally granted from the US Fish and Wildlife Service per a Federal Incidental Take Authorization prior to any project activities/environmental disturbance. This State authorization does not supercede any Federal rule and/or regulation regarding Federally (USFWS) listed species.

For the IL. Department of Natural Resources



Mike Conlin, Acting Director
Office of Resource Conservation

9.5.07

Date Signed

For the Ingram Materials Company (Ingram)



Signature

CHARLES J. SANDERS III

Please print name and official title

V.P. & GEN. MGR.

8/28/2007

Date Signed

F.3. Locations within West Virginia (Region 5 of the USFWS) in accordance with **required** state permits.

G. For all locations specified in Condition F.1., permittee shall notify the USFWS Field Supervisor for the state in which activities are proposed to occur at least 15 days prior to conducting any activities. Contact information is included as Attachment #1 to this permit. Your notification must be in writing and must indicate:

G.1. Location of proposed activities, including project site, county, and state

G.2. A description of the activities (i.e., surveys, studies, etc.)

G.3. Dates when the project is proposed to take place

G.4. Evidence that permittee has received any required contracts to complete the activities

G.5. You may only proceed with activities upon receipt of written concurrence from the Field Supervisor. **Your concurrence letter must be carried with this permit to authorize locations not named in this permit.**

H. Authorized activities include:

H.1. Take (collect and return) mussels for surveys by diving, snorkeling, or hand collecting and temporary holding of healthy specimens at approved collection site(s) identified. Use of brailing is **not** permitted.

H.2. Temporary holding of specimens in mesh bags, either suspended in the water or held in a container containing river water, while awaiting identification and data collection. Specimens may be held for up to 3 hours provided they are held in the water in bags that allow free movement of water the mussels were taken from or held in buckets of water that is changed every hour (every half-hour when air temperatures exceed 80°F) and replaced with water freshly taken from the water where the mussels were collected. Specimens must be returned to the locality they were taken, or to a location coordinated with and approved by the appropriate Fish and Wildlife Service Ecological Services Field Office (see Service Contact Field Offices below.) No live specimens may be removed from the site. Live specimens that cannot be identified at the site must be photographed for identification purposes and immediately returned to the substrate.

H.3. Collection of live specimens must be done only when the air temperature is above 32° Fahrenheit and the water temperature is above 40° Fahrenheit to avoid harm due to thermal shock. Specimens may be returned to the substrate as follows: 1) For surveys at water temperatures at or above 50°F (10°C), mussels may be dropped back into the water after identification; 2) for surveys conducted at water temperatures between 40° and 50°F, mussels must be returned to the substrate by divers. Divers should loosen approximately one square foot of substrate by hand or with a tool to a depth of approximately eight inches and place the mussel approximately half way into the loosened substrate, near the center of the loosened area, siphon (posterior) end up and pointing upstream.

H.4. All live mussels will be measured (length and height). Data collected will include descriptions of external morphometry and reproductive status. At each of the sample locations, individuals may be checked for gravidity; however, *mussels that are resistant to gravidity examination must not be examined for gravidity.*

H.5. If encountered in shallow water in circumstances which would reasonably be expected to result in the subsequent stranding and death of individuals of any listed species, those individuals appearing to be healthy may be moved into nearby deep water. *Permittee may not translocate healthy specimens under any other circumstances.*

H.6. If any specimens of Curtis' pearlymussel or Higgin's eye pearlymussel are encountered, the permittee will immediately notify the Fish and Wildlife Service Field Office in the State of occurrence (see condition L.10 below). The precise location of the site is to be marked on topographic map, a suitable marker placed on the stream bank to indicate the general location, and a suitable marker placed within the streambed to indicate the precise location of the specimen.

