

State Summary Overview of Instream Commercial Sand and Gravel Mining

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Introduction

Because of the widespread nature of commercial instream sand and gravel extraction in the Ohio River basin and the negative effects that have been reported in the literature on fishes (Cross *et al.*, 1982; Brown *et al.*, 1988) and freshwater mussels (Hartfield, 1993; Hubbs *et al.*, 2003), there is a need to examine state-by-state policy on the matter.

Federal Jurisdiction

The principal entity responsible for jurisdiction over instream sand and gravel mining is US Army Corps of Engineers (USCOE). Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 governs this authority. The USACOE is also responsible, in reviewing permits, to ensure that projects will not result in taking of Federally Protected species. If granting of permits would result in such an action, the USACOE must enter formal consultation with USFWS through Section 7 of the ESA.

Another pertinent legal statute is the "Tulloch Ruling". This regulation was adopted in 1993 as a means of strengthening wetlands protection laws and required a Section 404 permit if activities resulted in "incidental fallback", or material that falls back into the waterbody upon excavation. The USACOE authority to implement the Tulloch Ruling was removed in 1998, which has led to rampant wetland destruction in some states (Genovese, 2000). Subsequently, projects that would result only in "incidental fallback" are no longer regulated under Section 404 of the CWA.

From: <http://mdc.mo.gov/fish/watershed/niangua/landuse/270lutxt.htm>

In January 1997 a federal court reversed a 1993 ruling that was the basis for COE authority to regulate in stream sand and gravel excavation. In 1993, the Tulloch Rule found that "incidental fallback", small amounts of material that inevitably fall back in the stream when sand and gravel are excavated, was "fill" as regulated under Section 404 of the Clean Water Act. Several months after the 1997 ruling, the court issued a stay, pending appeal that reinstated COE authority over "incidental fallback", so the COE began issuing permits and enforcing its authority. However, the court again removed COE authority in July 1998. Currently, the COE does not regulate sand and gravel removal that results in "incidental fallback". However, COE permits are required for activities that include grading or pushing gravel in the stream channel; stockpiling, sorting, or crushing gravel in the stream channel or on gravel bars; access roads through the stream; and disposal of oversized material within the stream channel.

Reviews on the subject of instream sand and gravel mining can be found at <http://www.fws.gov/oregonfwo/InfEd/Documents/OSR1Mar06.pdf>. In short, instream sand and gravel mining can cause highly incised channels resulting from nickpoint migration, irreparable habitat loss, river widening, and long-term depression of mussel communities.

The state summary information summarized herein will be used to develop a white paper on the subject for Freshwater Mollusk Conservation Society.

Overview of State Regulations – ORVET region (progress to date)

State	Instream Sand/Gravel Mining Allowed	Mitigation/Reclamation Required?	Notes/Other Info
Arkansas	Y	N	
Indiana	Y	Royalty payments to state required	Mussel surveys in Ohio R to follow ORVET protocol
Kentucky	Y	N	See below
Minnesota	Y	Y (not specified)	See below
Missouri	Y	N	See below
Ohio	Y	Conditional	
Pennsylvania	Y	Royalty payments to state required	Bathymetric monitoring required before and for one year afterwards
West Virginia	Y	Conditional	

Specific State-by-State Information (to date)

Indiana: *State Regulatory Agency: Indiana Department of Environmental Management*

From <http://www.in.gov/legislative/ic/code/title14/ar29/ch3.html>

- Most regulation of the activity by the state is under the Indiana Flood Control Act
- People are allowed to excavate, fill, or grade instream material as long as they do not excavate the banks or excavate the bed, in watersheds less than one square mile of total drainage area. For watersheds > 1 sq mile, a permit is required. Permit is granted if applicant can show that the activity will not cause unreasonable detriment to fish, wildlife, or plants.
- Both Indiana Department of Environmental Management and USACOE regulate instream mining on navigable rivers under the Clean Water Act. Permittees must pay a royalty to the state to do instream mining in navigable waters.

Kentucky: *State Regulatory Agency: Kentucky Department of Environmental Protection – Division of Water*

From <http://www.water.ky.gov/NR/rdonlyres/CC4241FE-E221-46E5-BEBF-73B985A44EDF/0/EXCAVATINGGRAVEL.doc>

- Gravel excavation should be conducted outside of the stream flow and should be restricted to gravel bar areas.
- Gravel excavation should be conducted only during low-flow, preferably during late summer or fall.
- Gravel excavation should not be conducted during fish spawning season (April 15th to June 15th).
- Only the top of the gravel bar should be excavated (i.e., the portion of the bar more than 12 inches about the water surface).
- A buffer of ten (10) feet should be maintained between the shoreline and the work area.
- Gravel should not be stockpiled within the stream channel, but rather removed in a “one-step” manner. The work area should be smoothed over at the end of the day.
- The frequency of excavation should be limited to the extent possible. For example, remove gravel once during the year and stockpile it at an upland location. Then obtain gravel from the stockpile as needed.

- To promote bank stability, the removal of streamside vegetation should be kept to a minimum.
- Streams should not be used as roads to access work areas, except where access is limited to a single perpendicular (90 degree) crossing. The work area should be access from land where possible.

Advisory note (from KY DEP): "Many streams are too small to accommodate gravel excavation in an environmentally sound manner".

Minnesota: *State Regulatory Agency: Minnesota Waters*

From http://www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/index.html

Activities are covered under the MN Public Waters Work Permit Program. Permit applications are reviewed by respective county soil and water conservation districts, watershed districts, USACOE, and undergo an internal review by the DNR's Division of Fish and Wildlife. "Comments received during the review process can be incorporated into the permit decision document developed by the Division of Waters" (Bruce Gerbig, MN DNR Waters, per comm., 2006). The MN Division of Lands and Minerals gets involved if the permit is to take place on public lands. In addition, if over 10,000 gallons of water per day or 1,000,000 gallons/year is required to wash and process, a MN Water Appropriation Permit is required.

See <http://www.revisor.leg.state.mn.us/arule/6115/0280.html> for a full review of the statutes.

In summary (from Minnesota Rules Chapter 6115), instream commercial sand and gravel extraction is permitted if:

- A. There is no other feasible and practical location for the proposed mining activity;
- B. There is no other feasible or economical method to mine except by draining, diverting, or controlling public waters;
- C. The proposed alteration of public waters is necessary and no other feasible and economical method for it is reasonably available;
- D. The proposed alteration of public waters will not substantially impair the interests of the public in lands or waters or the substantial beneficial public use thereof, except as expressly authorized in the permit, and will not endanger public health or safety;
- E. The proposed mining operations will be in the public interest and that the public benefits resulting from it will be sufficient to warrant the proposed alteration of public waters.

Subp. 5. *Compensatory measures for detrimental aspects of mining.* Whenever metallic, nonmetallic, and peat mining activities in the beds of public waters will result in detrimental effects on the physical and biological character of public waters, measures to compensate for the detrimental aspects shall be required in the permit conditions.

- The requirement for a mussel survey is up to MN DNR and decided on a case-by-case basis.

Missouri - *State Regulatory Agency: Missouri Department of Natural Resources*

From <http://www.sos.mo.gov/adrules/csr/current/10csr/10c40-10.pdf>

- Excavation of sand or gravel deposits shall be limited to deposits in unconsolidated areas containing primarily smaller material (at least eighty-five percent (85%) of the material is less than three inches (3") in diameter) that is loosely packed and contains no woody perennial vegetation greater than one

and one-half inches (1 1/2") in diameter, measured at breast height, four and one-half feet (4.5'). Request for variance is allowed.

- An undisturbed buffer of 10-foot width shall be left between the excavation area and the water's edge of the flowing stream at the time of excavation. A buffer zone of adequate width to protect bank integrity should be left between the excavation area and the base of the high bank. Request for variance is allowed.
- Sand or gravel shall not be excavated below water elevation at the time of removal, except:

A. If the stream is dry at the time of excavation, excavation shall not occur deeper than the lowest undisturbed elevation of the stream bottom adjacent to the site. Upon request of the applicant, excavation depth restriction may be modified if the staff director determines that a variance would not significantly impact the stream resource.

B. For wet stream reaches, excavation depth restriction may be modified if it is determined by the staff director that a variance would not significantly impact the stream resource based on the presence of bedrock to prevent head cutting, excessive bedload, gravel rich areas or any other appropriate reason.

- Aggregates and fines removed during operation must be placed beyond the high bank of the stream.
- Gravel and sand washing, crushing, or sorting has to be conducted beyond the high bank in non-wetland areas that could flood; no discharge of silty discharge is allowed back into any stream or wetland.

Ohio - *State Regulatory Agency: Ohio Environmental Protection Agency – Division of Surface Water*

From: http://www.epa.state.oh.us/dsw/401/primer_s.pdf

- Applicants are required to obtain an Ohio Section 401 Water Quality Certification. To get a CWA Section 404 permit, applicants must submit 1) The preferred project design 2) A Minimal Degradation alternative 3) A Non-Degradation alternative.
- Permits require a particle size analysis and a chemical analysis.
- In the state of Ohio, Ohio River commercial activity is allowed between ORM 68 to 116.
- Mitigation requirements are the same as conditions specified in West Virginia 401 water quality certification regulations.
- Section 401 permit conditions are conditional in the State of Ohio (no standard regulations specific to the state). One of the most pertinent issues is the safeguarding of native mussel beds in Ohio (Laura Fay, Ohio Division of Surface Water, per. comm., 2006).

Recent Permit Conditions applied to Commercial Dredging (from Jan 2004)

- If a proposed area has not been cleared by a survey within the last 5 years, dredging is prohibited within 400 feet of shorelines at normal pool elevations if a native mussel population is known to occur within 1,000 feet of the proposed dredge site.
- If no mussel populations are located in the proposed work area, dredging is prohibited within 200 feet of the normal pool elevation shoreline.
- No dredging is 500 feet upstream and 100 feet downstream of embayments and stream confluences.
- No dredging is permitted 1,000 feet upstream, 200 feet downstream, and 500 feet from the navigational channel shoreline of islands at normal pool elevations.
- From the 200-foot shoreline limit, a 2:1 slope is required to prevent bank erosion.
- Any additional dredge projects would require side scan sonar readings for proposed areas.

Mussel bed protection requirements for the State of Ohio (from a recent permit): No dredging is allowed 1000 feet upstream, 200 feet down, and 500 feet lateral from a known mussel population. A mussel survey is required for potential operations from 200 to 400 feet of the shoreline at normal pool elevation. Surveys must be supervised or conducted by a biologist with mussel survey experience. Brailing surveys are allowed from April 1 to September 30.

Pennsylvania - *State Regulatory Agency: Pennsylvania Department of Environmental Protection*

From PA DEP guidance document for commercial sand and gravel mining, primarily related to freshwater mussel sampling requirements:

- “Dredging cannot occur bank-to-bank since commercial dredging is prohibited from the shoreline to a distance 150 feet beyond the 6-foot contour on each bank. The 150-ft buffer (between the 6-foot contour to the start of dredging) was established to protect riverbanks from disturbance that could be caused by dredging close to shore. “
- Mussel surveys are to be conducted “in the area likely to be *directly or indirectly affected*, which includes the proposed dredge area and buffers minimally extending 500 feet upstream and laterally from the proposed dredge area, and 1500 feet downstream.”
- “If any Federally listed species are collected, then the off-limit zone (dredging restriction) will include that river segment and a reach 1,000 feet upriver (approximately 2 study segments) and 250 feet downriver (approximately ½ of a study segment) of the mussel resource. The off-limit zone will only apply to the side of the river where the mussels were found.”
- “If a juvenile mussel is collected in greater than 6 feet of water, at normal pool elevation, then the off-limit (dredging restriction) will be that river segment in which the juvenile mussel was collected, and 250 feet downriver (approximately ½ of a study segment) of the mussel resource. The off-limit zone will only apply to the side of the river where the mussels were found.”
- If a ‘Significant Mussel Resource’ is located, the off-limit area “will include that river segment and a reach 1,000 feet upriver (approximately 2 study segments) and 250 feet downriver (approximately ½ of a study segment) of the mussel resource. The off-limit zone will only apply to the side of the river where the mussels were found. “

Tennessee: *State Regulatory Agency: Tennessee Department of Conservation*

From <http://state.tn.us/environment/wpc/ARAPgp/Sand&GravelDredging.pdf>

Dry Gravel Bars Mining

- Excavation is not allowed at or below the water level of the stream at the time of activity.
- Mining activities must be conducted in the dry, with equipment kept outside of stream flow. A minimum 5-ft berm is required to be placed between the stream flow and work area.
- The permit does not allow for any discharge of fill or dredge material to be discharged into the waters of the state.
- Sediment controls must be used to prevent materials from entering a water of the state. This includes the use of grassy channels or the use of pipes.

Wetted Channel Mining

There was no response for this information request from TDEC.

West Virginia - *State Regulatory Agency: West Virginia Department of Environmental Protection*

Regulatory information from: http://www.dep.state.wv.us/Docs/8170_401CER_1_Feb05.DOC

- Dredging of mussel beds is not allowed (J. Clayton, WV DNR, per. comm., 2006)
 - WV Section 401 permit (Water Quality Certification) is required for any sand/gravel operations in the state. 401 regulations require proof of a No Practical Alternative Demonstration.
 - Monetary or compensatory mitigation may be conditionally applied to instream commercial mining activities in the state; mitigation measures are decided prior to permit issuance.
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No response yet to information requests.

Some Selected Dredging References:

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- Brown, A.V., Lyttle, M.M., and K.B. Brown. 1998. Impacts of gravel mining on gravel bed systems. *Transactions of the American Fisheries Society* 127: 979-994.
- Cross, F.B., DeNoyelles, F.J., Leon, S.C., Campbell, S.W., Dewey, S.L., Heacock, B.D., and D. Weirick. 1982. Report on the impact of commercial dredging on the fishery of the lower Kansas River. A report to the Kansas City District US Army Corps of Engineers, DACW 41-79-C-0075.
- Genovese, M. 2000. Implications of the revocation of the "Tulloch Rule". Master Thesis, Virginia Polytechnical Institute and State University, Blackburg.
- Hartfield, P. 1993. Headcuts and their effects on freshwater mussels. Pp. 131-140 *in* Cummings, K.C., A.C. Buchanan, and L.M. Koch, eds. Conservation and management of freshwater mussels. Proceedings of a UMRCC symposium, 12-14 October, 1992, St. Louis, Missouri. Upper Mississippi River Conservation Committee, Rock Island, Illinois. 189 pp.
- Hubbs, D., Lanier, S., McKinney, D., Sims, D., and P. Black. 2003. Evaluation of abandoned commercial sand and gravel dredge sites as freshwater mussel habitat on the lower Tennessee River. Report of the Tennessee Wildlife Resources Agency, Nashville. iii + 51 pp.
- Kondolf, G.M. 1997. Hungry water: effects of dams and gravel mining on river channels. *Environmental Management* 21(4): 533-551.
- Lopez, J.L. 2004. Channel response to gravel mining activities in mountain rivers. *Journal of Mountain Science* 1(3): 264-269.
- Martin, C.R., and T.B. Hess. 1986. The impacts of sand and gravel dredging on trout and trout habitat in the Chattahoochee River, Georgia. Report of the Georgia Department of Natural Resources, Game and Fish Division, Atlanta, Georgia. 36 pp.
- Meador, M.R., and A.O. Layher. 1998. Instream sand and gravel mining: environmental issues and regulatory process in the United States. *Fisheries* 32(11): 6-13.
- National Marine Fisheries Service. Undated. National Gravel Extraction Guidance. 26 pp.
- Roell, M. 1999. Sand and gravel mining in Missouri stream systems: aquatic resource effects and management alternatives. Publication of the Missouri Department of Conservation, Columbia, Missouri. 43 pp.
- Winkley, B.R., and P.C. Harris. 1973. Preliminary investigation of the effects of gravel mining in the Mississippi River. Report by the US Army Corps of Engineers, Potamology section, river stabilization branch, U.S. Army Engineer District, Vicksburg, Mississippi.

Also recommended:

<http://www.fws.gov/oregonfwo/InfEd/Documents/OSR1Mar06.pdf> - document developed by USFWS on sand removal from streams in Oregon.

<http://www.fws.gov/oregonfwo/InfEd/Documents/SedimentRemovalBibliography.pdf> - a more complete bibliography developed by USFWS on sand/gravel extraction.