

# GRAVEL REMOVAL FROM STREAMS

Kentucky Division of Water

## Background

Reports of excessive gravel removal from Kentucky streams have prompted the Kentucky Division of Water (DOW) to reiterate creek gravel extraction guidelines to minimize impacts on the physical, chemical, and biological characteristics of the waterway. Creek gravel is used by road departments, construction companies, and private landowners in a variety of ways. The size, shape, hardness, and chemical composition of stream gravel make the gravel ideal for use in concrete.

## Harm to Streams

However, when gravel is removed from the stream channel in an environmentally unsound manner, the disturbance to the stream bed and banks can degrade the stream channel, water quality, and aquatic life. Gravel removal causes the stream bed and banks to become unstable, sometimes for miles upstream and downstream. The resulting head cuts and bank failures impact farmlands, wetlands, recreational areas, and infrastructure.

Contrary to popular belief, removing gravel bars does not help control floodwater. Removal of material from the streambed will damage riffles, pools and vegetation that reduce the speed of flowing water. Dredging removes this natural structure, replacing it with a uniform stream bottom that does not slow the flow of water, again increasing erosion. A wider channel will slow the movement of water so the stream is unable to move sediment. Gravel and sand will be deposited in the widened channel, filling the waterway and forcing water outside the stream's banks.

Since gravel provides a natural filtering system, its removal increases the volume of sediment in the water. The resulting cloudy, or turbid, water harms fish by clogging their gills, reducing the oxygen in the water and impairing feeding and egg development.



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## Guidelines for Creek Gravel Excavation to Minimize Harm to the Stream

- Avoid using vehicles and heavy equipment in the water. If you must cross the stream, drive vehicles at right angles to stream flow.
- Excavate only once per year during low-flow periods of late summer or fall, avoiding the fish spawning season of April 15 to June 15.
- Avoid using vehicles and heavy equipment in the water. If you must cross the stream, drive vehicles at right angles to stream flow.
- Excavate gravel by using backhoes and front-end loaders to scoop and lift the material and place it outside of the stream channel. Perform work from the bank of the stream, avoiding use of vehicles in the stream channel.
- Keep fuel, oil and other waste out of the stream.
- Avoid channel straightening or packing sand and gravel on eroding stream banks.
- Do not remove gravel from riffles (shoals) because they prevent erosion of the stream bed. Riffles are very important to stream stability and are a major source of food and oxygen for aquatic life.
- Avoid washing sand or gravel in the stream channel to avoid polluting the water with sediment. If you must wash sand or gravel, use a settling basin and wash your material outside of the stream.
- Restrict excavation to the top 12 inches of gravel bars outside of the stream flow.
- Maintain a buffer of 10 feet between the shoreline and the work area and minimize vegetation loss. Vegetation holds gravel and soil, keeping bars and banks in place.

## Potential Violation of Water Quality Standards

It should be noted that in-stream activities that significantly increase sedimentation or alter stream flow are violations of state water quality standards and may be subject to enforcement action.

Additionally, stockpiling of excavated material in the floodplain will require the acquisition of a floodplain permit from DOW.