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Town Board
Hay Creek Township
Goodhue County, Minnesota

Via electronic mail

In re: Hay Creek Township Ordinance No. 2013-02

Dear Board Members:

I write on behalf of Minnesota Trout Unlimited members, thousands of anglers and myself to urge your adoption of Township Ordinance No. 2013-02, recommended for adoption by the Hay Creek Township Planning Commission on June 19, 2013. I regret that I am unable to attend in person this evening, but I request that my written comments be entered into the record.

Hay Creek and other trout streams in the area draw anglers from across Minnesota, the region and even the nation, and help support local businesses in the township and neighboring areas. I have regularly traveled to Hay Creek for fishing and frequented the local campground and restaurant since the late 1970s. Numerous other anglers, including many members of Trout Unlimited, do the same. However, the fragile trout fisheries in the township and surrounding areas are dependent upon the flow of cold groundwater from natural springs. If groundwater flows are disrupted by industrial silica sand mining, the streams could cease to support trout.

Many hundreds of thousands of dollars and thousands of hours of volunteer effort have been invested by Trout Unlimited members and the State to improve trout habitat and secure fishing access easements on Hay Creek. Unless reasonable restrictions such as those contained in Ordinance No. 2013-02 are adopted without delay, these investments will be wasted and a vibrant segment of the local economy damaged. Enacting the restrictions in Ordinance No. 2013-02 would also provide emerging sand mining businesses with a degree of certainty and a roadmap, save them the expense and permitting delays caused by poor site selection.

Preservation of trout fisheries through preserving groundwater flows.

The steady flow of cold groundwater is the lifeblood of trout fisheries in the township. As you know, groundwater is water which has seeped into the ground from the surface, over a period of days, months, years or even centuries. In the karst area of southeast Minnesota it even flows as

underground streams, and pools between confining layers of rock or clay, forming underground reservoirs of clean water referred to as “aquifers”. Groundwater flows from cracks in the confining bedrock as natural springs and seepage areas. Due to the cooling effect of the earth, groundwater issues from springs and seeps at consistently cold temperatures. This cold spring water is the lifeblood of Hay Creek and other local trout streams. Without the stable base flow of cold groundwater these trout fisheries will disappear. No cold groundwater; no trout. It is that basic.

Industrial silica sand mining and processing activities have the potential to disrupt flows to springs and trout streams, but they need not do so. What are needed are basic protections, including those in the proposed ordinance, which also will serve as useful guidance to the industry concerning mining locations and methods to avoid.

Sound basis for setback to prevent disruption of groundwater flow patterns.

Even mines or quarries which stay above the water table can nonetheless disrupt the hydrology of an area and irreversibly impact trout streams. It is possible in an area of active karst features such as Hay Creek Township for sand mines to alter groundwater and surface water flow patterns, disrupt the recharge of the aquifers, diminish the quantity and timing of groundwater discharges into springs and trout streams, and diminish the quality of nearby fisheries. Attached is a diagram that illustrates how groundwater moves underground to spring outlets in karst areas.

Each mine and quarry has the potential to have profound impacts on the local groundwater flow system, water temperatures in nearby springs and streams, and trout populations in those streams. A MNDNR study of the Big Spring quarry near Harmony, Minnesota in Fillmore County provides a good illustration of how quarries can seriously disrupt groundwater conduit flow paths and cause great environmental harm. Although the Big Spring quarry is located above the water table, quarrying operations penetrated the conduit system, causing ground water that formerly discharged at the Big Spring on Camp Creek to instead discharge in the quarry. This water either sinks back into the limestone to re-emerge (warmer) at the Big Spring or flows overland to Camp Creek. Dye tracing at the site demonstrated that approximately 90 percent of the ground-water basin is now being routed through the quarry. Without any dewatering occurring, this quarry has permanently altered groundwater flow paths. This water is exposed to thermal impacts and is more vulnerable to pollution from quarrying activities. Temperature measurements indicate that the Big Spring was 8 degrees Fahrenheit warmer in July than the water that first discharges in the quarry, and the stream flowing out of the quarry to Camp Creek was 17 degrees warmer! Temperature changes of this magnitude can have significant negative effects on trout populations in nearby streams.

See Hydraulic Impacts of Quarries and Gravel Pits, J.A. Green, J.A. Pavlish, R.G. Merritt, and J.L. Leete, Minnesota Department of Natural Resources, Legislative Commission on Minnesota Resources Report, 2005, pp. 53 – 56.

The study's author, Jeff Green, indicated that the conduit system severed by mining activity was approximately 3,000 feet from the spring! He also indicated that it was advisable to include an additional safety factor of two thousand feet or more in any setback. He and other experts have noted that underground conduit systems can be far longer than one mile in length. Consequently, a one mile set back from trout streams is well justified and probably adequate to prevent the piracy of vital groundwater flows in most instances. The DNR scientists support such a setback.

Sound basis for restriction on operating too near the water table.

The State currently allows mining and quarrying of industrial silica sand below the water table and the DNR does not have rulemaking authority to develop restrictions for the geologically and ecologically unique southeast corner of the state. If an individual landowner or company chooses to mine sand below the water table (the level corresponding to the top of the uppermost layer of groundwater in an area) then the operation would need to "dewater" the surrounding area. This entails pumping out all of the groundwater from a large area surrounding the mine site. Tens or hundreds of millions of gallons of groundwater each year can be pulled from a large "cone of depression" in the surrounding aquifer and discharged overland to surface waters – but much warmer and potentially laden with fine silt, sediments and any chemical used in the operations.

Geologists have indicated that a restriction limiting industrial silica sand mining to no closer than 25 feet above the water table will be sufficient in most cases to account for swings in water levels due to large rain events or longer term precipitation patterns. Keeping this new type of activity at least 25 feet above the water table in the township should be sufficient in most cases to prevent needless removal of groundwater in this manner.

The restrictions contained in Ordinance No. 2013-02 are needed to ensure the continued existence of the world-class trout fisheries the township is blessed with. These commonsense restrictions will not impede the industry, but in fact will provide useful guidance on locations and methods to avoid in order to avoid long and expensive delays in permitting and environmental review.

I urge your support for the adoption of Ordinance No. 2013-02. Thank you.

Respectfully,

A handwritten signature in black ink, appearing to read "John P. Lenczewski". The signature is fluid and cursive, with a large, sweeping initial "J".

John P. Lenczewski

Attachment

This diagram illustrates the underground water channels which carry cold groundwater to springs and trout streams.

How Karst Works

