PERMITTING AGGREGATE MINES IN MICHIGAN POSES VERY SERIOUS CONSEQUENCES

By Mike WilczynskiGuest Author/March 30, 2022 / 7 minute read

Overview

Permitting of non-metallic mines (such as frac sand mines) in Michigan varies significantly across municipalities. This two-part series discusses the terms of these permitting processes, with examples of how activists and residents have used this framework to fight infrastructure permitting.

This is the second in a two-part series written by Mike Wilczynski, certified professional geologist with Pangea Environmental, LLC, and member of Friends of the Platte River Watershed. Mike lives in Detroit.

As stated in Part 1, under the state's Zoning Enabling Act (ZEA), aggregate mines in Michigan can only be denied for specific reasons. These are a lack of demonstrated need for the aggregate, or a lack of demonstrated value of the deposit. The need and value then need to be balanced against the potential very serious consequences (VSC) that may occur. The ZEA limits the VSCs to the following, taken directly from the ZEA:

5) In determining under this section whether very serious consequences would result from the extraction, by mining, of natural resources, the standards set forth in Silva v Ada Township, 416 Mich 153 (1982), shall be applied and all of the following factors may be considered, if applicable:

(a) The relationship of extraction and associated activities with existing land uses.

(b) The impact on existing land uses in the vicinity of the property.

(c) The impact on property values in the vicinity of the property and along the proposed hauling route serving the property, based on credible evidence.

(d) The impact on pedestrian and traffic safety in the vicinity of the property and along the proposed hauling route serving the property.

(e) The impact on other identifiable health, safety, and welfare interests in the local unit of government.

(f) The overall public interest in the extraction of the specific natural resources on the property.

When a serious consequence become a VSC is a matter of debate, and sometimes is settled in court.

One issue that is almost sure to come up in the review process is the impact on property values. Mine applicants commonly submit a report by the Phoenix Group to support their assertion the mine will not lower property values. However, the locations used in the study are not representative of a more populated Midwest setting in proximity to a mine. The study states that the lack of data makes an estimate of the impact on property values difficult to predict, and more research is needed. It is very difficult to understand—unless you have a background in statistics.
Other studies (by the Upjohn Institute and others) have predicted up to a 35% decline in property values near a mine and haul routes. This conclusion is obviously intuitive. Would you pay full value for a property if a mine was going in next door?

A logical person has to conclude property values will decline when the pasture across the road becomes an aggregate mine spanning several hundred acres, with the accompanying noise, dust, potential water quality problems, and overall lowering of the quality of life. To think otherwise is insulting to the people who cannot sell their homes because of having a mine as a neighbor.

The aggregate industry mentions the mines do not pose a health hazard.

MICHIGAN SAND, GRAVEL, AND OTHER MINES

This is a map of Michigan sand, gravel, and commodity mines. The data for this map was comprised form multiple sources including archived Michigan EAGLE documents and the Western Michigan University. Map developed by Ted Auch of FracTracker Alliance. View the map “Details” tab below in the top left corner to learn more and access the data, or click on the map to explore the dynamic version of this data. Data sources are also listed at the end of this article. In order to turn layers on and off in the map, use the Legend dropdown menu. This tool is only available in Full Screen view. Items will activate in this map dependent on the level of zoom in or out.

VSCs of mining operations

However, silica is a potential serious health concern near mines that extract silica rich deposits—such as mines in glacial deposits for sand and gravel, or high quartz bedrock for frac sand, glass, and other industrial uses.

Silica is quartz, one of the most common rock-forming minerals. It makes up much of the sand size and finer material in glacial deposits. It is also the main mineral in sandstone that is mined for frac sand.

Silica can cause silicosis, lung cancer, and other serious health problems. At one location in Michigan, where dust control has been a longstanding problem, the Michigan Department of Health and Human Services is conducting an environmental study because of the apparent cluster of illnesses around a sand and gravel mine.

Rock crushing operations in Michigan are required to get a General Permit for air quality under Part 55 of the Natural Resource and Environmental Protection Act (NREPA). This permit does not require monitoring for airborne silica leaving the mine site. Workers' exposure is controlled by the Mine Safety and Health Administration (MSHA), but across the property line, residents are exposed to unknown quantities of airborne silica. Airborne Particulate Matter (PM) of any type has the potential to impact human health.

Groundwater and surface water—including wetlands—are commonly associated with the mining of sand and gravel glacial deposits and bedrock deposits for frac sand. The geological processes that left the sand and gravel glacial outwash deposits form wetlands, lakes, and streams. The bedrock deposits for frac sand are generally below the glacial deposits or the groundwater table. An understanding of the subsurface geology of the site and surrounding area are critical in an evaluation of potential impacts to groundwater or surface water, and these potential impacts can also affect the economic "value" of the mined resources.

An improper or total lack of the consideration of the geology and how the water will flow across the surface and/or in the subsurface has resulted in environmental problems that could have been prevented.

Wetlands, farm ponds, and natural springs have been adversely impacted as the result of poor hydrogeological studies, and a lack of enforcement of state laws by local units of government (LUGS) and the Michigan Dept. of Environment, Great Lakes, and Energy (EGLE).

Understaffing and underfunding of EGLE is greatly responsible. Retirements have left the Department with inexperienced staff, who many times from our experience do not have the education and/or experience properly to enforce environmental laws.

Hydrogeology, or the study of groundwater, can be complicated, and computer models can be used to further complicate the review of an application by the LUG. Not all LUGs have someone on staff to review properly the geological/hydrogeological reports—if one is even submitted.

A Frustrating Review Process

Traffic and pedestrian safety is a valid reason to deny an aggregate mine. Gravel trucks can require a quarter mile to stop, even under ideal conditions. Insufficient sight distances because of curves and hills near intersections, stoplights, or school bus stops are valid reasons to deny a mine, and have been used successfully. In one location, the constant heavy truck traffic is impacting the foundations of historic buildings.

How an aggregate mine fits into the surrounding land uses should be considered in a review. People move to an area for a reason, such as a quiet rural setting. Using this as a reason to deny the mine can become difficult to show. Strong public interest in stopping the mine can lend much needed support to the argument that the mine does not further the character of the area and would disrupt the lives of the residents.

Watching the review process as a mining geologist is a frustrating experience.

The restriction of only having two to three minutes to speak and voice concerns adds to the frustration. Written reports are not always read or understood by the officials deciding. There is no way to tell if they correctly understood the information without feedback. The mine applicant has almost unlimited time to speak in favor of the mine, while residents and experts are limited to several minutes to refute multiple claims that involve complicated issues.

The process is skewed in favor of the mine applicant, and the decision-making process is not always transparent. Mine applicants have been known to threaten legal action against the LUG if they deny the mine. Rural townships with low populations where most mines are located have limited resources to fight international corporations. It is unfortunate that they can ignore the enforcement of state and federal environmental laws in order to avoid legal action and legal bills a LUG cannot afford. The lack of support from EGLE related to the enforcement of state environmental laws adds to the problem.

Examples of varied permitting

In Grass Lake Township, Jackson County, a sand and gravel mine was granted a one-year renewal of their Special Use Permit (SUP) in 2019. They apparently granted this renewal with incorrect maps and statements made to the Township Planning Commission (PC). The maps that were sealed by a Professional Engineer (PE) did not agree with air photos taken several weeks later.

The maps showed a small water body under five acres. Creating a water body with a surface area of five acres or larger requires a Part 301 Permit under NREPA. The applicant stated that water bodies would not reach five acres. The air photo taken from a helicopter showed a lake about ten acres in size. This was enough evidence for EGLE to investigate, issue a Violation Notice, and stop all mining in the lake until they got a Part 301 Permit. This requires a hydrogeological study. The PC approved the maps along with the SUP—despite resident's concerns regarding the mine's operations.

In 2020, a five-year extension of the SUP was granted again, despite residents' complaints. In addition, the Michigan Department of Health and Human Services (MDHHS) is conducting a study into the conditions around the mine, because of an apparent cluster of illnesses. This issue was raised, along with the outstanding violation for creating a lake five acres or larger, and other environmental and human health concerns. The wetland delineation has also not yet been approved by EGLE.

None of this mattered to the PC, and a five-year renewal was approved, with one dissension.

The approval also allowed mining close enough to the water table that the mine floor broke through to the aquifer in places. They did this so the miner could continue to operate under the terms of the violation notice from EGLE. Mining this close to the water table is not an environmentally sound practice for several reasons. Fluctuating groundwater levels is one problem.

Currently, EGLE is still reviewing the hydrogeological study. We submitted comments that the report is flawed because it does not account for the impacts to groundwater during the dredge mining and creation of another lake—one that also appears to be over five acres in size during dredge mining.

In Barry County, a sand and gravel mine was approved in one meeting despite residents' concerns. In Vienna Township in Montmorency County, it took two meetings. We were told the outspoken property owner did not receive a notice for the second meeting.

A mine expansion was approved in Gaines Township, Kent County, that destroyed a horse farm pond next door. Despite many attempts by the property owner, the township and mining company have not addressed the destruction of private property.

We have presented geological cross-sections that demonstrated the pond and wetlands would experience water loss if the mine was allowed to expand to EGLE prior to the destruction. Our complaint was closed, and EGLE refused to meet and discuss why.

Silica dust is another issue at this location, and has affected the operation of the horse farm. The farm is also no longer suitable for continued use in a program to help autistic adults and children, due to dust and noise. As mentioned previously, the air quality permit from EGLE does not require any monitoring for the off-site migration of airborne silica.

Figure 1. The Bohne Rd mine in Grass Lake Township, Jackson County, MI. Photo by Mike Wilczynski, 2019.

Figure 2. This is the Grass Lake Township water body that was not supposed to exceed five acres in size. Photo by Doretta Anema, 2021.

Figure 3. Horseback riding helmets at the Gaines Township horse farm are covered in silica dust from the nearby mine's operations. Photo by Doretta Anema, 2021.

Figure 4. Aerial view of the Gaines Township mine. Photo by Benjamin Anema, 2020.

The Take Away

It is apparent the current system is not working very well.

However, as stated previously, the legislation submitted favors mining companies—at the expense of environmental protection and human health concerns. The patchwork system of local mining ordinances and interpretation of the ZEA is problematic to the mining companies as well. To fix this situation, we must continue to build off years of tireless community organizing to demand that elected officials listen more to affected people, and less to lobbyists and other industry representatives.

References & Where to Learn More

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Michigan Natural Resources & Environmental Protection Act (1994)

Violation Notice to mine applicant from the Michigan Department of Environment, Great Lakes & Energy (2020)

Gravel mine project leaves some residents angry, The Exponent Live (2020)

for clean water, clean air, and healthy communities.