

History of the FRONT 40

The Front 40 is a grassroots organization formed in 2003 in response to the threat of a metallic sulfide mine potentially being developed on the shores of the Menominee River in Lake Township, Michigan. The Front 40 name is in direct response to the “Back Forty” venture that was created by the mining interests. By the time citizens were aware of what was happening, the mining interests had already filed for over 40,000 acres of mineral rights to both private and state-owned property in Menominee County, MI and about that same amount in Marinette County, WI.

The Front 40 is a 501(c) (3) non-profit organization registered in the State of Michigan. Tax deductible donations to help fund future Front 40 activities can be sent to:

Front 40
PO Box 113
Stephenson, MI 49887

For more information visit:
menomineeriver.com

Mission Statement

It is the principal objective of the FRONT 40 Environmental Group to ensure that metallic sulfide mining operations are not allowed to adversely impact our rivers, lakes, groundwater and lands by: 1) creating public awareness of mining exploration currently being performed in Menominee County; 2) informing citizens and elected officials of the reality of community economic issues typically involved with mining operations.



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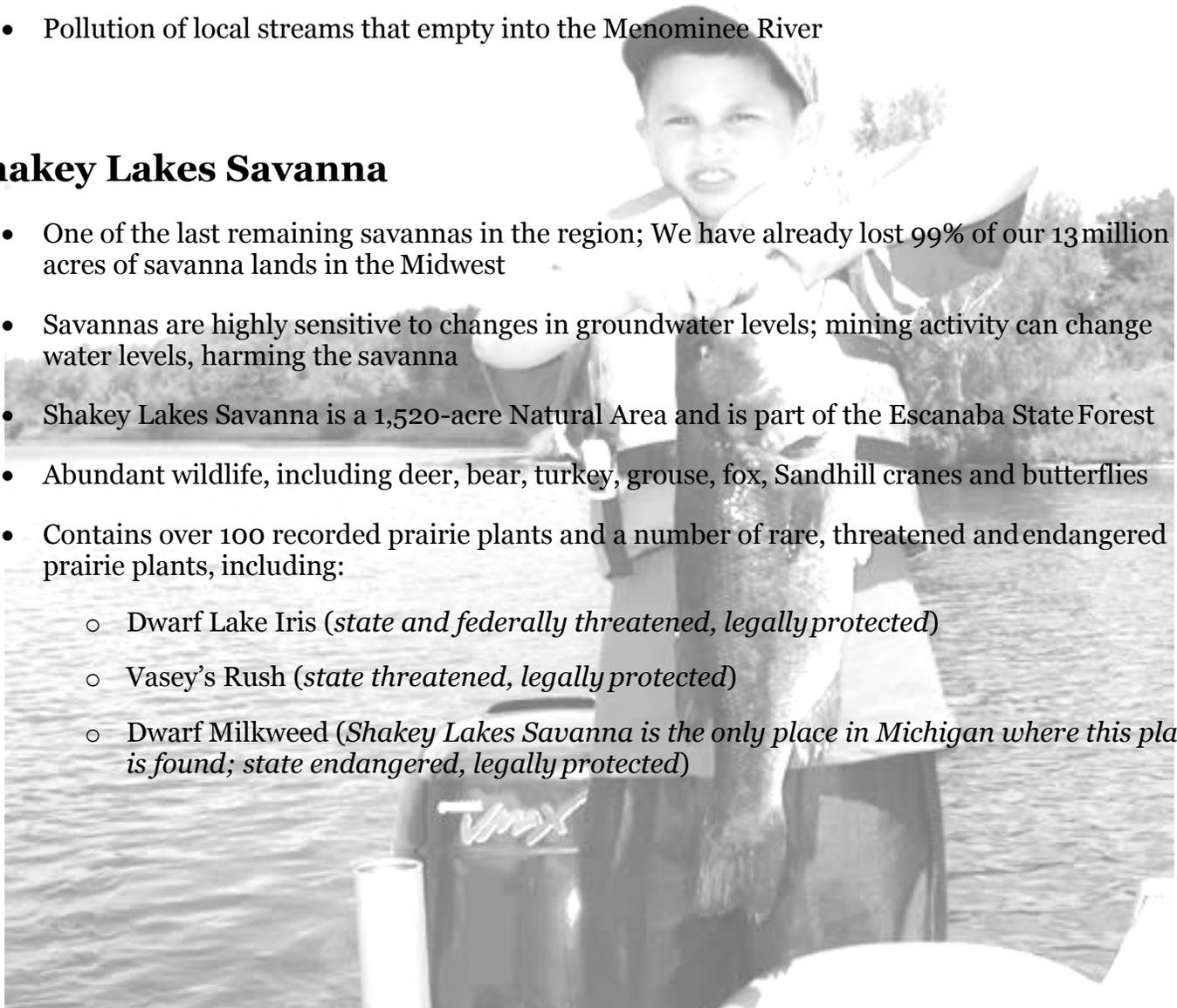
Mining on the Menominee: What's At Stake?

The Menominee River

- Ground water depletion
- Ground water contamination
- Viability of local wells
- The largest river system in the Upper Peninsula
- A sturgeon spawning area with strong populations of small mouth bass, walleye and northern pike
- Pollution of local streams that empty into the Menominee River

Shakey Lakes Savanna

- One of the last remaining savannas in the region; We have already lost 99% of our 13 million acres of savanna lands in the Midwest
- Savannas are highly sensitive to changes in groundwater levels; mining activity can change water levels, harming the savanna
- Shakey Lakes Savanna is a 1,520-acre Natural Area and is part of the Escanaba State Forest
- Abundant wildlife, including deer, bear, turkey, grouse, fox, Sandhill cranes and butterflies
- Contains over 100 recorded prairie plants and a number of rare, threatened and endangered prairie plants, including:
 - Dwarf Lake Iris (*state and federally threatened, legally protected*)
 - Vasey's Rush (*state threatened, legally protected*)
 - Dwarf Milkweed (*Shakey Lakes Savanna is the only place in Michigan where this plant is found; state endangered, legally protected*)

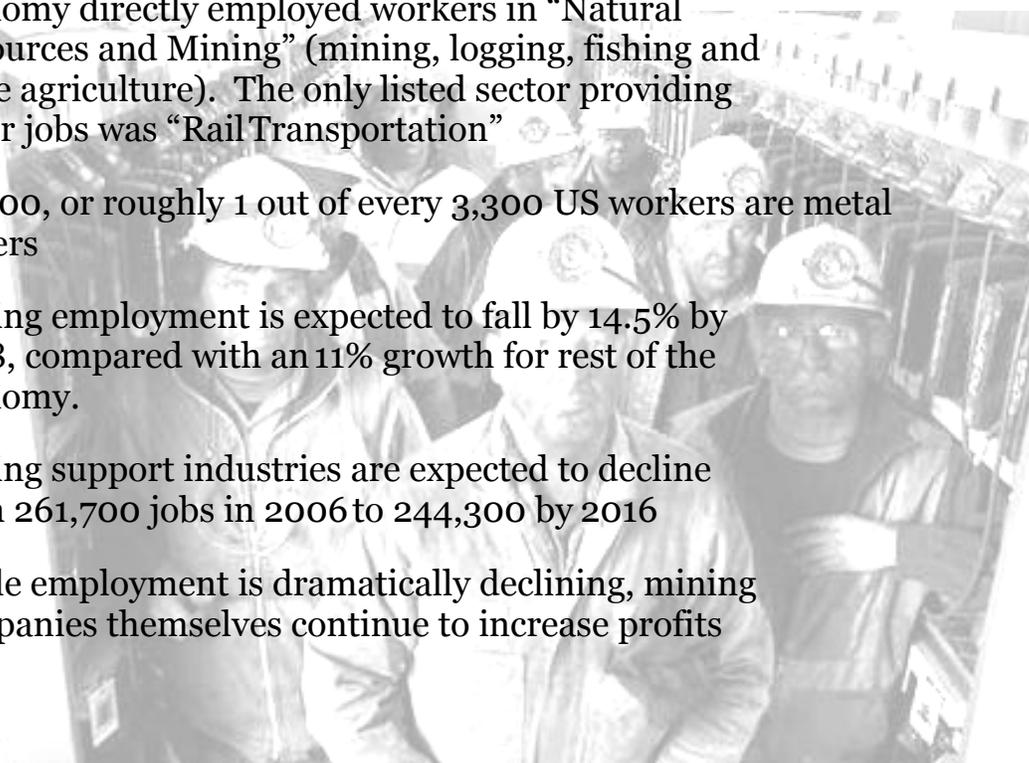




Mining Jobs: The Reality

Mining Jobs: The Reality

- *“The most preposterous claim is that mining is going to create healthy communities. We have the city of Virginia almost surrounded by operating taconite plants. We have six operating mines on the Mesabi Range. **If mining created healthy communities, we should have one by now.**”*— Retired Minnesota iron miner and conservationist, Bob Tammen, 2010
- In 2009 less than two-tenths of 1% of the Michigan economy directly employed workers in “Natural Resources and Mining” (mining, logging, fishing and some agriculture). The only listed sector providing fewer jobs was “Rail Transportation”
- 39,900, or roughly 1 out of every 3,300 US workers are metal miners
- Mining employment is expected to fall by 14.5% by 2018, compared with an 11% growth for rest of the economy.
- Mining support industries are expected to decline from 261,700 jobs in 2006 to 244,300 by 2016
- While employment is dramatically declining, mining companies themselves continue to increase profits

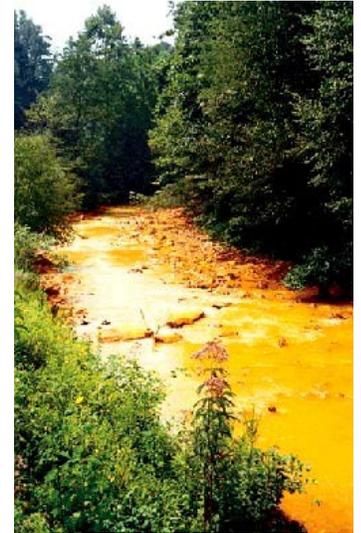




Acid Mine Drainage

What is Acid Mine Drainage (AMD)?

- Hardrock mining (also known as sulfide mining) is the process of extracting metals (such as zinc and gold) from a metallic sulfide ore body
- Sulfide ore, exposed to water and air, creates sulfuric acid
- Sulfuric acid can drain from the mine site—called acid mine drainage (AMD)—harming water resources, people, plants, animals, and metal and concrete structures
- AMD dissolves toxic heavy metals, such as lead, nickel, arsenic and mercury, which leak into the water supply and food chain
 - High levels of exposure to heavy metals can cause cancer, birth defects, neurological disorders, and other health problems
- Over 10,000 miles of rivers in the American West have been contaminated with AMD
- In the United States overall cleanup for AMD is estimated to be around \$30 billion, with up to 550,000 sites requiring cleanup
- Aquila Back Forty Project is considered a “massive sulfide” deposit; the “main zone” of the deposit is made of more than 80% sulfide minerals



Acid Mine Drainage, Photo Courtesy U.S. Environmental Protection Agency

Some Acid Mine Drainage Disasters in the United States

- 100 miles of the Clark Fork River, in Montana, the Coeur d' Alene River, in Idaho, and the Columbia River, in Washington, are contaminated with heavy metal pollution from mining
- AMD at the Summitville Mine, in Colorado, killed all aquatic life in a 17-mile stretch of the Alamosa River; the EPA designated the area a Superfund site
- Dakota Mining left South Dakota taxpayers with a \$40 million cleanup in 1998
- When Pegasus Gold filed for bankruptcy at its Zortman Landusky Mine, in 1998, Montana taxpayers were left with millions of dollars in long-term cleanup costs
 - Peter Bradshaw, a former director at Pegasus Gold, is also on the board of directors of Aquila Resources
- Iron County, Michigan, has a number of problems with AMD; the Buck and Dober iron mines continue leaching AMD into the Iron River
 - According to the Government of Norway, AMD is “considered one of the most serious mining- related environmental problems across the world”



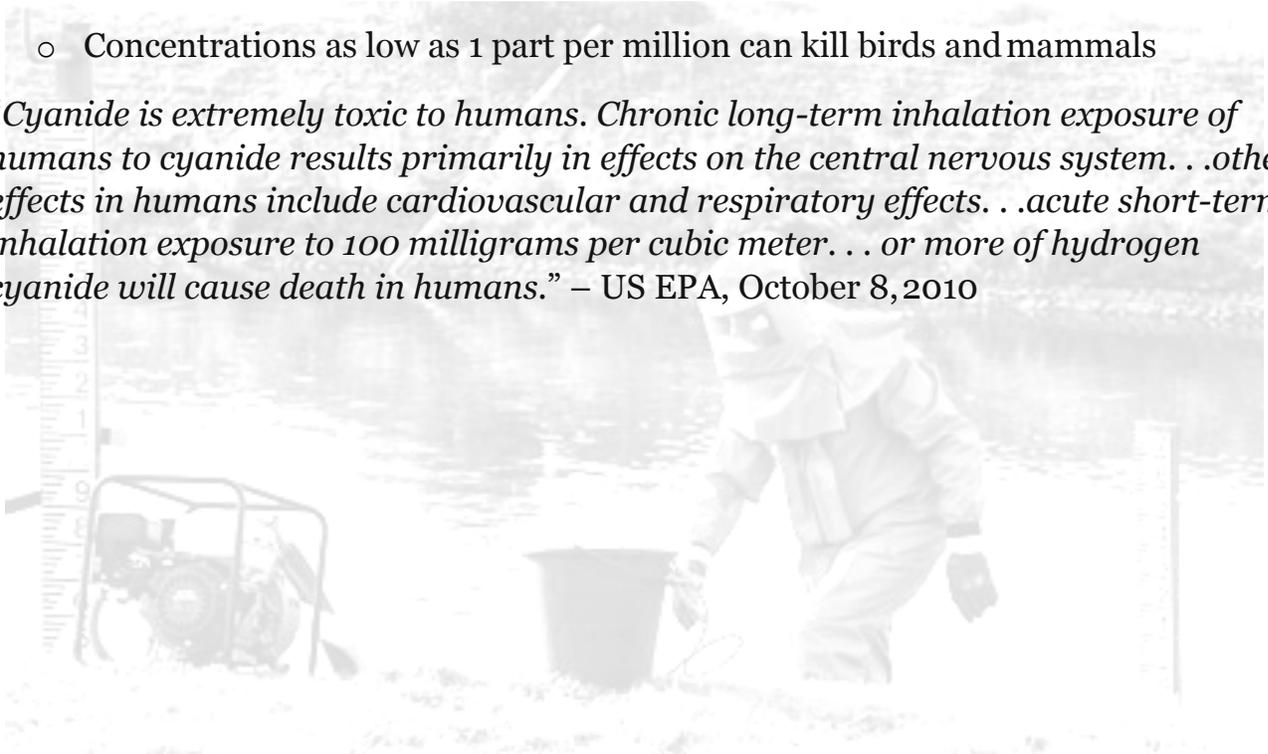
The Dangers of Cyanide in Mining

What is Cyanide Used For?

- Cyanide solutions readily bond with gold, silver, copper and other metals
- Cyanide leaching is the most common method to extract gold at mines
 - Vat-leaching involves mixing ore with a cyanide solution in large vats
 - Heap-leaching involves spraying a cyanide solution over piles of ore
- According to Aquila Resources, the Back Forty Project would “probably” use cyanide

Cyanide and Your Health

- Cyanide is highly toxic to people and wildlife
 - A rice grain-sized dose of cyanide or a teaspoon of a 2% cyanide solution can kill a human
 - Concentrations of cyanide as low as 1 part per billion in a liter of water can kill fish and severely contaminate drinking water
 - Concentrations as low as 1 part per million can kill birds and mammals
- *“Cyanide is extremely toxic to humans. Chronic long-term inhalation exposure of humans to cyanide results primarily in effects on the central nervous system. . . other effects in humans include cardiovascular and respiratory effects. . . acute short-term inhalation exposure to 100 milligrams per cubic meter. . . or more of hydrogen cyanide will cause death in humans.” – US EPA, October 8, 2010*



Cyanide Disasters

- At Aurul gold processing plant, in Romania in 2000 a tailings dam break allowed 100,000 cubic meters of cyanide and heavy metal-laden wastewater to contaminate the Danube River and drinking water in a number of towns
 - Considered one of central Europe's largest environmental disasters
 - Hundreds of fishermen were suddenly jobless as 1,400 tons of fish were killed
- Kumtor Gold Mine, Kyrgyzstan, central Asia, 1998 – A truck carrying 2 tons of sodium cyanide crashed into the Barskoon river
 - At least two citizens died and the area's tourism industry was devastated
- Summitville Mine, Colorado, 1992 – Summitville gold mine was responsible for contaminating 17 miles of the Alamosa river with cyanide and other contaminants
- Zortman-Landusky Mine, Montana, 1982 – 52,000 gallons of cyanide solution poisoned the drainage that supplies fresh drinking water for the town of Zortman
 - In 1998 the company, Pegasus Gold, filed for bankruptcy, leaving taxpayers with millions of dollars in long-term cleanup costs

Limits on Cyanide

- A 1998 citizen's initiative in Montana banned open-pit cyanide leaching in new gold and silver mines
- In Colorado, five counties banned the use of cyanide in heap leach mining
- A number of other areas in Europe and Latin America have also banned or restricted cyanide in mining

Gold: How Much More Do We Need?

- Gold is most commonly extracted today using cyanide leaching
- Hardly any gold is used for necessary or useful industrial purposes
- More than 80% of gold is used for jewelry
 - 20 tons of waste rock is created in order to produce a single gold ring
- Much of our gold sits in government vaults as gold bullion, serving no useful purpose
- Scrap recovery of gold constitutes 28% of global supply
 - Nearly all non-aesthetic uses could be accommodated by using recycled gold
- The Aquila Back Forty mining project would produce about 2 grams, or roughly the weight of two small paperclips, of gold for every ton of waste rock



Michigan's Part 632 Mining Law: In Need of Reform

What is Part 632?

- Michigan law regulating nonferrous (non-iron) metallic sulfide mining
- Unanimously passed by the state legislature and signed into law by Governor Jennifer Granholm in 2005; adopted by state agencies in 2006
- Law work group consisted of mining corporations, state and local politicians, regulators, environmental groups, tribal interests, and other industry groups

Busting Two Common Myths About Part 632

Myth #1: The law was “unanimous” and a “consensus” that benefits all involved

Reality: Many citizens, some local groups and the Keweenaw Bay Indian Community refused to endorse the law

Myth #2: The law is the strongest in the nation and protects the environment

Reality: The law, heavily influenced by skilled industry lawyers and lobbyists, contains numerous loopholes and weaknesses, making environmental protection and public health considerations secondary to mining industry profits

Former US Representative Bart Stupak Said Part 632 Had Major Problems

“When the Michigan legislature first considered the new mining law that made sulfide mining possible, I expressed significant concern that baseline standards were not called for in the law. In early 2006, when the Michigan Department of Environmental Quality first allowed for public comment I raised these concerns. Unfortunately, four years later these concerns still remain unaddressed.” – Bart Stupak, July 2010

The Mining Industry Admits it Favors Them

- “Michigan recently implemented mining friendly legislation.” – Aquila Resources presentation
- “There was a certain point in time when all of a sudden the lights came on, at least me, and I said this isn’t a rule about stopping mining, this is about how to go from A to Z to get a mining permit.” – Dave Anderson, Orvana Minerals’ Copperwood Project Coordinator and Part 632 observer, December 2010
- “That’s why I could take this to my board . . . That’s why we came to Michigan to invest. We felt it was very transparent. We already knew the permit process is a one-year process.” – Bill Williams, Orvana Minerals’ VP for Corporate Development, March 2009

Some of the Law's Weaknesses

- **Part 632 makes water pollution legal**
 - Water only has to be cleaned to safe drinking water standards, which is usually far dirtier than existing water in the Upper Peninsula and can be harmful to aquatic resources, like fish.
- **No requirement for an *independent* environmental impact statement (EIS)**
 - Michigan does not require an independent EIS. Here, the mining company is trusted to collect data and craft its own assessment.
- **Not enough financial assurance is required for potential mine clean-up costs**
 - Clean-up costs at metallic sulfide mines are usually underestimated. In Michigan, if a company goes bankrupt or causes major pollution, taxpayers would be left with most of the cost.
- **No simple, common sense and protective “Prove it first” standards**
 - A provision requiring the mining industry to prove sulfide mining can be done safely before opening a mine here is just common sense (*see Wisconsin's Law below*).
- **No protection of sensitive, special, water-rich areas**
 - The law does not allow for “siting” concerns, meaning that certain areas highly sensitive to pollution are not protected.
- **Unrealistic time constraints on regulators reviewing projects**
 - A report commissioned by the state found that Part 632 does not allow state agencies enough time to fully review a mining application.
- **Strips local government authority, giving most power to Lansing**
 - Part 632 prevents local units of government from regulating most mining activities, including construction, and can only regulate the mine's hours of operation and hauling routes if it “accommodates” mining interests.

Wisconsin's Common Sense Law

- While Wisconsin's actual mining regulations remain weak, the state has a “moratorium” on metallic sulfide mining.
- The common sense law, enacted in 1998, simply requires a mining company to provide two things before it can mine:
 - One example of a mine that operated for at least 10 years without polluting area groundwater or surface water with acid drainage or heavy metals, and
 - One example of a mine that has been closed for at least 10 years without polluting area groundwater or surface water with acid drainage or heavy metals
- **No company has passed this simple test!**