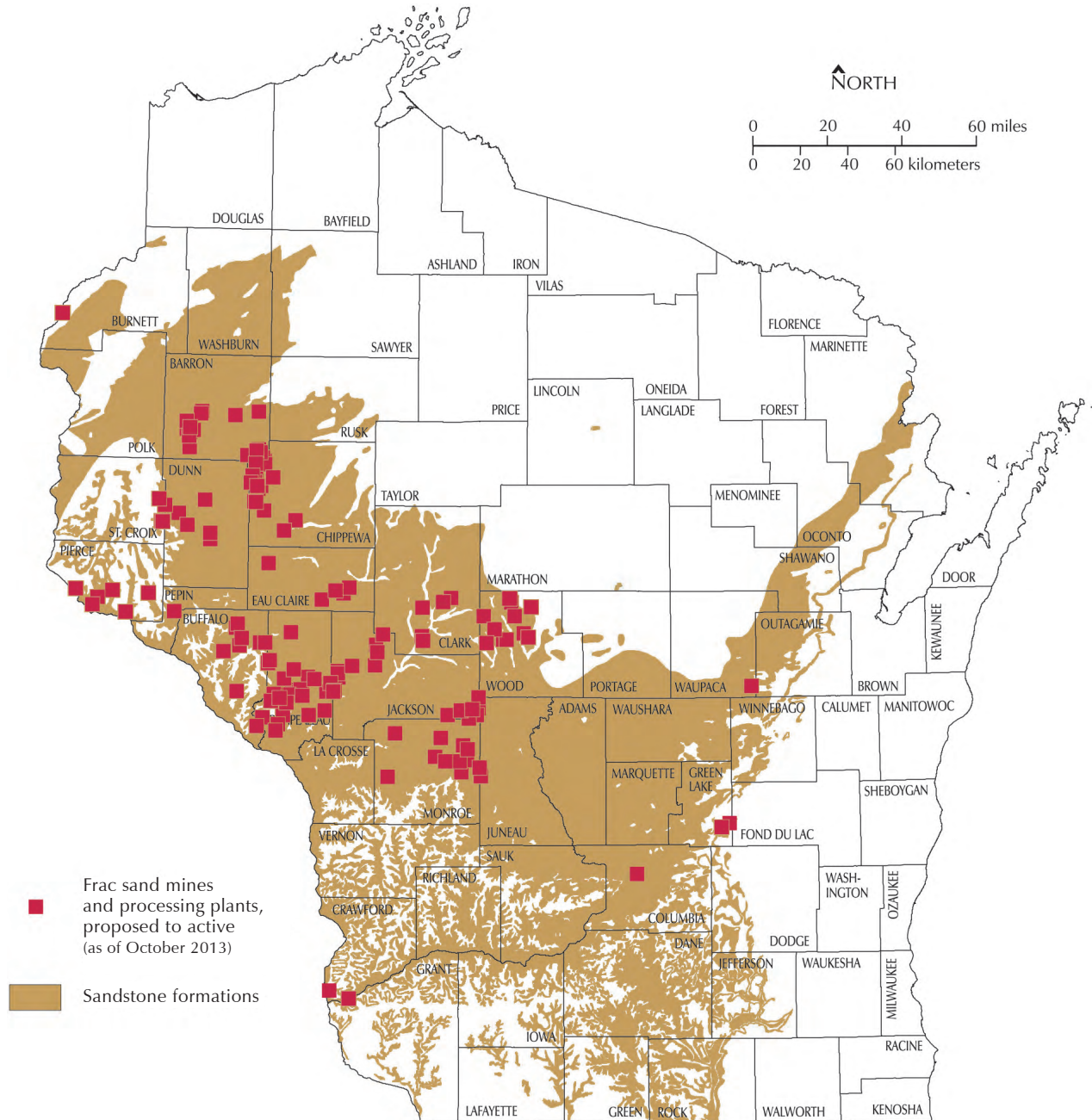


Frac sand in Wisconsin

Wisconsin Geological and Natural History Survey

Factsheet 05 | 2014



Sources: Geology—Wisconsin Geological and Natural History Survey; mines and processing plants—Wisconsin Center for Investigative Journalism (WisconsinWatch.org)

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Wisconsin has abundant resources of sand that have been mined for more than 100 years. Our sand is used for glass manufacture, foundry molds, even golf course sand traps. It has also been mined for the petroleum industry for many years. Recent advances in extracting oil and gas using a process called “fracking” (short for hydraulic fracturing) have greatly increased the demand for Wisconsin’s sand.

What is frac sand?

Frac sand is quartz sand of a specific grain size and shape that is suspended in water and chemicals and injected into oil and gas wells under very high pressure. The fluid pressure opens and enlarges fractures as well as creates new ones. Sand grains are carried into these fractures and prop them open after the fluid pressure is released.

The type of sand used in this process must be made up almost entirely of quartz grains that are very round, extremely hard, and of a specific size range. Before shipment to the well site, frac sand is washed, sorted, and dried.

Wisconsin has some of the best frac sand in the country because several of our geologic formations meet these specifications, are near the surface, and are close to bulk transportation corridors such as rail or barge.

Where is frac sand found?

Frac sand is currently being mined from sandstone formations in much of western and central Wisconsin. The same formations are less well exposed and generally finer-grained in the eastern and southern parts of the state. Sand from younger glacial deposits as well as most beach and riverbank sand is too impure and too angular to be used as frac sand.

Where is fracking performed?

Fracking has been used by our domestic oil and gas industry for the past 75 years. The development of horizontal drilling technology coupled with hydraulic fracturing has allowed production of previously unrecoverable natural gas resources in the eastern, western, and southern United States.

In Wisconsin, a different kind of fracking is used to increase the productivity of water supply wells in relatively impermeable rocks, such as the granite in the central part of the state. In these cases, only pressurized water is injected into the well—no sand or chemicals are added.

Permits and regulations

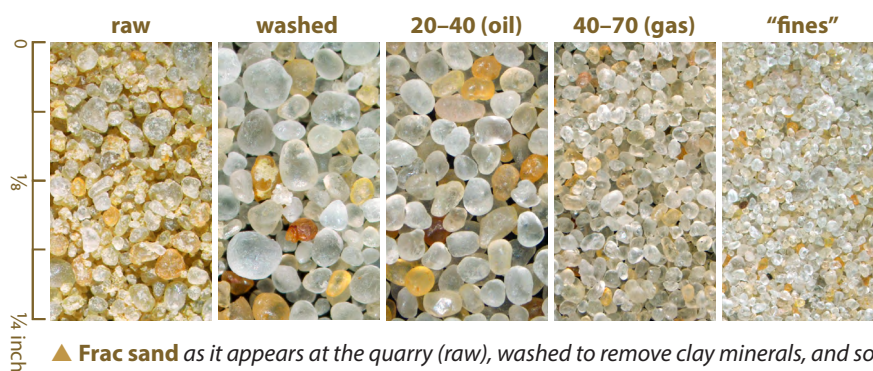
Concerns have been raised regarding environmental and nuisance problems as sand mines proliferate. Mine siting is regulated at the local zoning level. Mine reclamation plans, required by NR 135, must be in place before mining begins. The Department of Natural Resources provides technical assistance to county regulatory authorities for these plans. For a summary of regulations that apply to nonmetallic mining in Wisconsin, visit the DNR website at <http://dnr.wi.gov/topic/mines/nonmetallic.html>.

For more information

Contact the following staff at the Wisconsin Geological and Natural History Survey for more details about frac sand in Wisconsin:

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▲ **Frac sand** as it appears at the quarry (raw), washed to remove clay minerals, and sorted by size for various uses (number ranges identify openings per inch in the sorting sieves). Sand that is too small for use in hydraulic fracturing (“fines”) may be used as fill for mine reclamation, as cow bedding, or for other purposes.