



# 2014 Minerals Yearbook

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**WISCONSIN [ADVANCE RELEASE]**

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# THE MINERAL INDUSTRY OF WISCONSIN

By Robert M. Callaghan

**This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Wisconsin Geological and Natural History Survey for collecting information on all nonfuel minerals.**

In 2014, the partial value of the nonfuel mineral production<sup>1</sup> in the State of Wisconsin (fig. 1) was \$3.47 billion,<sup>2</sup> 4.3% of the total U.S. nonfuel mineral production value, ranking it seventh in the Nation. This was a 131% increase from the State's revised partial total of \$1.50 billion<sup>2</sup> in 2013 (table 1). Production value from two remaining companies operating lime plants in the State (table 3), after industry consolidation in 2012, was excluded from the total in 2013 and 2014 to avoid disclosing company proprietary data. Industrial sand and gravel was by far the leading mineral commodity in both quantity and value and accounted for the large increase in the State's total nonfuel mineral production value between 2013 and 2014. Other leading nonfuel mineral commodities included construction sand and gravel, crushed stone, dimension stone, and lime. Wisconsin ranked first in the Nation in industrial sand and gravel production quantity and ranked third in the Nation in both total dimension stone production and in the dimension limestone subcategory. On a per capita basis, the State had a value of \$602 compared to a national average of \$252 in 2014 (table 2).

## Events, Trends, and Issues

In 2014, the production value of most commodities increased from 2013. However, most commodities remained below or on par with levels found at the end of the 2007–09 recession, with the notable exception of an exponential increase in industrial sand and gravel value (fig. 2). As of May 2014, there were 63 mine sites, 45 processing sites, and 27 rail-loading facilities for industrial sand and gravel (Wisconsin Department of Natural Resources, 2014), compared to 6 known producers in 2004. Sand mined in Wisconsin was considered to be premium for use in the oil and gas industry for hydraulic fracturing. Most sand was mined from the Ordovician St. Peter Sandstone, which consists of 99.8%-pure quartz and is often found in near-surface deposits. In addition to purity, the sand had other preferred characteristics, such as good roundness, size of grains, and sphericity, and the sandstones exhibited good friability (Benson and Wilson, 2015, p. 2, 8, 12). An industry study found that since 2012, increased drilling rig efficiency and longer lateral lengths of hydraulic fracturing led to a large increase in average quantity of sand needed per drill rig. Increased mining led to the

need for investment in larger load-out and transload facilities, which in some places had experienced volume bottlenecks. Use of unit trains increased to 25% of all industrial sand transportation, a 500% increase from 2013 (Shearer, 2014). A more efficient transportation infrastructure facilitated more sand mining. The number of employees working at mine processing plants almost doubled in 2014 from 2013 (table 2). Much of this increase was from increased processing of industrial sand and gravel in Wisconsin for shipment to oil and gas production operations.

The large increase in industrial sand and gravel mining activity was a cause for concern for some citizens. These concerns included air quality near the industrial sand and gravel mines (especially because of silica-containing dust), noise levels, water-quality issues and water withdrawals, transportation issues (wear and tear on roads as well as safety issues), mine lighting issues, mine reclamation requirements, and mine operations issues such as blasting and wildlife protection. Sand mine regulations and permits were handled at the county level. One county with a lot of mining activity, Trempealeau, imposed a 1-year moratorium on new frac sand mines in August 2013 while issues of public health and welfare were studied. A final report that examined issues of the ability to maintain stable communities, air quality, light pollution, radon and radioactivity, sound pollution, and water quality was issued in September 2014 and presented numerous recommendations for the county to consider, including changes to mining ordinances (Miller and others, 2014, p. 7–10). At the State level, the Wisconsin Department of Natural Resources (undated) requested comments from the public in 2014 to determine the scope of a planned frac sand analysis that would update an earlier report; more than 800 comments were received.

## Aggregates by State and End Use

A companion dataset, "Aggregates by State and End Use," replaces the discrete aggregate tables that were included in the individual State chapters prior to 2014 and is available on the State Minerals Statistics and Information web page at <https://minerals.usgs.gov/minerals/pubs/state/>. This dataset is updated annually.

## References Cited

Benson, M.E., and Wilson, A.B., 2015, Frac sand in the United States—A geological and industry overview: U.S. Geological Survey Open-File Report 2015–1107, 78 p. (Accessed May 17, 2016, at <http://dx.doi.org/10.3133/ofr20151107>.)

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<sup>1</sup>The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All USGS mineral production data published in this chapter are those available as of June 2017. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the internet at <http://minerals.usgs.gov/minerals>.

<sup>2</sup>Partial total; excludes values that must be withheld to avoid disclosing company proprietary data.

Miller, Sally, Aasen, John, Larson, Dave, Rhoda, Sherry, Winey, Paul, Custer, Cristeen, Feil, Liz, Nelson, Pam, Gundersen, E.O., Zeglin, Tim, Taylor, Lois, and Slaby, Sarah, 2014, Final report on the public health impacts of non-metallic industrial sand mining in Trempealeau County: Whitehall, WI, Trempealeau County Board of Health, 147 p. (Accessed April 4, 2018, at <http://www.trempeleaucounty.com/tchome/landmanagement/documents/informational/PublicHealthImpactsofNMISMinTrempealeauCounty.pdf>.)

Shearer, Rick, 2014, The frac sand 'gold rush' is based on logistics, *in* Managing railroad capacity for future success—Midwest Association of Rail Shippers 2014 summer meeting, Lake Geneva, WI, July 15, 2014, Proceedings: Wayne, IL, Midwest Association of Rail Shippers. (Accessed January 10, 2018, at [https://www.mwrailshippers.com/wp-content/uploads/sites/2/2017/04/2014\\_shearer\\_presentation.pdf](https://www.mwrailshippers.com/wp-content/uploads/sites/2/2017/04/2014_shearer_presentation.pdf).)

Wisconsin Department of Natural Resources, 2014, Locations of industrial sand mines and processing plants in Wisconsin: Wisconsin Department of Natural Resources. (Accessed February 27, 2018, via <https://web.archive.org/web/20140729182614/dnr.wi.gov/topic/Mines/ISMMap.html>.)

Wisconsin Department of Natural Resources, [undated], Industrial sand mining strategic analysis: Wisconsin Department of Natural Resources. (Accessed February 27, 2018, at <http://dnr.wi.gov/topic/EIA/ISMSA.html>.)

TABLE 1  
NONFUEL MINERAL PRODUCTION IN WISCONSIN<sup>1,2,3</sup>

(Thousand metric tons and thousand dollars)

| Mineral                         | 2012                |                        | 2013                |                        | 2014     |           |
|---------------------------------|---------------------|------------------------|---------------------|------------------------|----------|-----------|
|                                 | Quantity            | Value                  | Quantity            | Value                  | Quantity | Value     |
| Gemstones, natural <sup>c</sup> | NA                  | 7                      | NA                  | 7                      | NA       | 7         |
| Lime                            | 924                 | 102,000                | W                   | W                      | W        | W         |
| Peat                            | W                   | (4)                    | --                  | --                     | --       | --        |
| Sand and gravel:                |                     |                        |                     |                        |          |           |
| Construction                    | 28,200 <sup>r</sup> | 142,000 <sup>r</sup>   | 24,600 <sup>r</sup> | 127,000 <sup>r</sup>   | 25,500   | 143,000   |
| Industrial                      | 10,700              | 611,000                | 19,800              | 1,210,000              | 38,300   | 3,150,000 |
| Stone:                          |                     |                        |                     |                        |          |           |
| Crushed                         | 22,300              | 135,000                | 20,300 <sup>r</sup> | 129,000                | 20,800   | 134,000   |
| Dimension                       | 158                 | 37,900                 | 156                 | 37,200                 | 190      | 40,200    |
| Total                           | XX                  | 1,030,000 <sup>r</sup> | XX                  | 1,500,000 <sup>r</sup> | XX       | 3,470,000 |

<sup>c</sup>Estimated. <sup>r</sup>Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; excluded from "Total." XX Not applicable. -- Zero.

<sup>1</sup>Includes data available through June 2017.

<sup>2</sup>Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

<sup>3</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>4</sup>Withheld to avoid disclosing company proprietary data; included in "Total."

TABLE 2  
MINING ACTIVITY IN WISCONSIN

| Mining activity                                  | 2012               | 2013             | 2014             |
|--|--------------------|------------------|------------------|
| State rank <sup>1</sup>                          | 23                 | 13               | 7                |
| Employment, number: <sup>2</sup>                 |                    |                  |                  |
| Nonfuel mineral mines                            | 2,389              | 2,670            | 2,506            |
| Mills and plants                                 | 678                | 655              | 1,205            |
| Number of nonfuel mineral mines <sup>2</sup>     | 633                | 642              | 633              |
| Number of mills and plants <sup>2</sup>          | 35                 | 32               | 50               |
| Average annual wage, all mining <sup>3</sup>     | dollars per year   | 60,314           | 60,533           |
| Average annual wage, all industries <sup>3</sup> | do.                | 41,764           | 42,572           |
| Per capita value                                 | dollars per person | 180 <sup>1</sup> | 262 <sup>4</sup> |
| National per capita value <sup>1</sup>           | do.                | 241              | 236              |
| do. Ditto.                                       |                    |                  | 252              |

<sup>1</sup>Based on unadjusted State total value.

<sup>2</sup>Source: U.S. Mine Safety and Health Administration.

<sup>3</sup>Source: National Mining Association.

<sup>4</sup>Based on partial State total value to avoid disclosing company proprietary data.

TABLE 3  
STRUCTURE OF THE NONFUEL MINERAL INDUSTRY IN WISCONSIN

(Nonfuel-mineral-producing companies, not including aggregate producers)

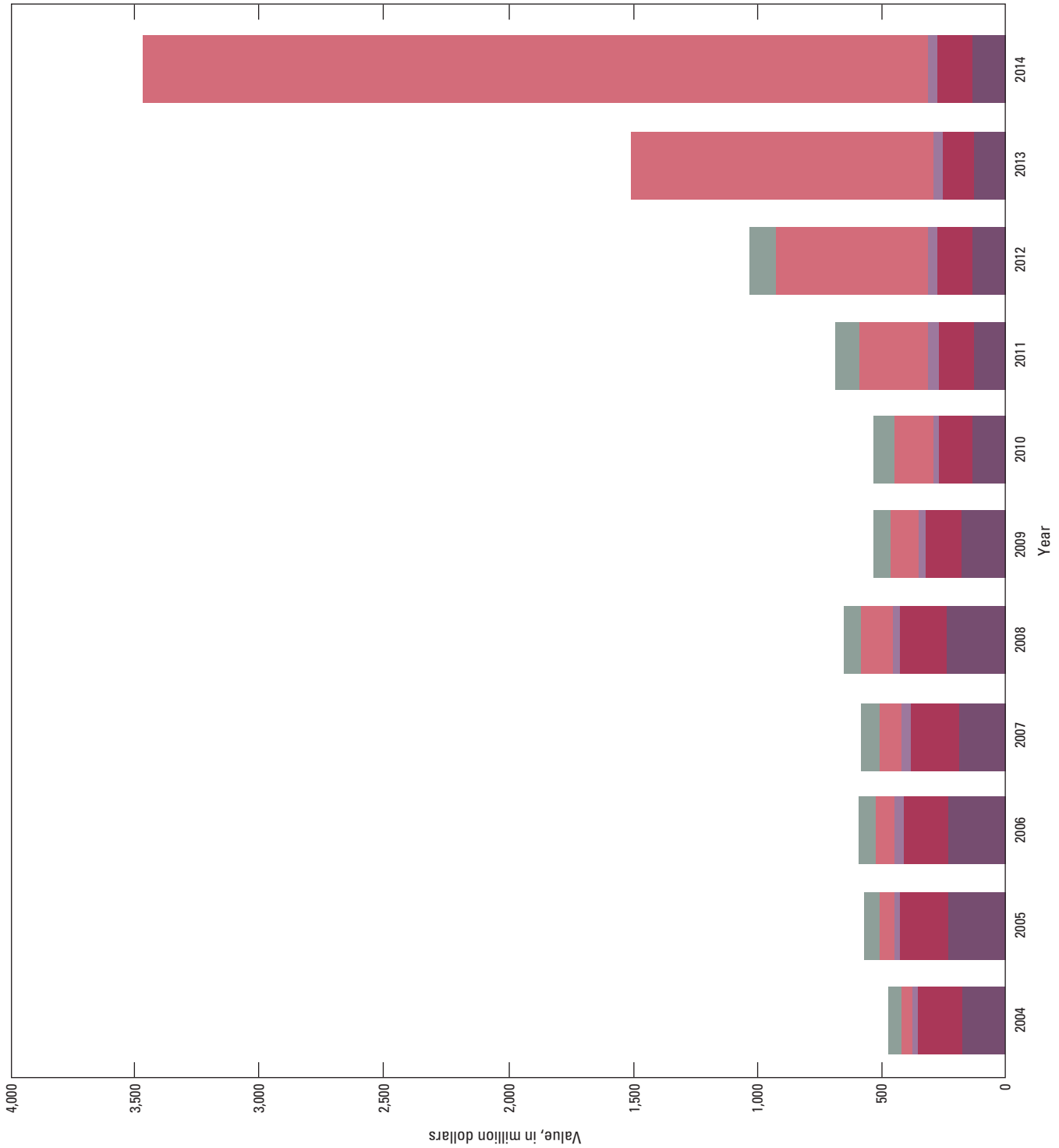
| Commodity                   | Company                                 | County                           |
|-----------------------------|---|----------------------------------|
| Gemstones <sup>1</sup>      | Various                                 | Various                          |
| Lime                        | Carmeuse Lime & Stone                   | Manitowoc                        |
| Do.                         | Graymont Western Lime Inc.              | Brown, Douglas, Fond Du Lac      |
| Sand and gravel, industrial | AF Gelhar Co. Inc.                      | Green Lake                       |
| Do.                         | Badger Mining Corp.                     | Green Lake, Jackson, Pepin       |
| Do.                         | Bechel Sand & Gravel                    | Pepin                            |
| Do.                         | Carri Scharf Materials Co.              | Monroe                           |
| Do.                         | Chieftan Sand Inc.                      | Barron                           |
| Do.                         | Chippewa Sand Co LLC                    | Chippewa                         |
| Do.                         | Completion Industrial Minerals LLC      | Wood                             |
| Do.                         | Coulee Frac Sand LLC                    | Jackson                          |
| Do.                         | Doine Enterprises LLC                   | Wood                             |
| Do.                         | Fairmont Santrol Inc.                   | Dunn, Pierce                     |
| Do.                         | Faulks Brothers Construction, Inc.      | Waupaca                          |
| Do.                         | Hi-Crush Proppants LLC                  | Eau Claire, Monroe, Trempealeau  |
| Do.                         | Kraemer Mining & Materials Inc.         | Chippewa                         |
| Do.                         | Marawood Construction Services Inc.     | Clark                            |
| Do.                         | Milestone Materials                     | Dunn, Jackson, Monroe, St. Croix |
| Do.                         | Mississippi Sand LLC                    | Trempealeau                      |
| Do.                         | Opelt Sand & Gravel LLC                 | Clark                            |
| Do.                         | Panther Creek Sand LLC                  | Clark, Wood                      |
| Do.                         | Pattison Sand Co., LLC                  | Crawford                         |
| Do.                         | Preferred Proppants LLC                 | Chippewa                         |
| Do.                         | Preferred Sands of Wisconsin LLC        | Trempealeau                      |
| Do.                         | Red Flint Group LLC                     | Chippewa                         |
| Do.                         | Sand Products of Wisconsin LLC          | Trempealeau                      |
| Do.                         | Sand Technologies LLC                   | Buffalo                          |
| Do.                         | Smart Sand, Inc.                        | Monroe                           |
| Do.                         | Source Energy Services Ltd.             | Barron                           |
| Do.                         | Source Energy Services Proppants LLP    | Rusk                             |
| Do.                         | Superior Silica Sands LLC               | Barron, Chippewa, Trempealeau    |
| Do.                         | Taylor Frac LLC                         | Jackson                          |
| Do.                         | Total Excavating LLC                    | Trempealeau                      |
| Do.                         | Unimin Corp.                            | Columbia and Monroe              |
| Do.                         | U.S. Silica Co.                         | Monroe                           |
| Do.                         | Wisconsin White Sand LLC                | Do.                              |
| Do.                         | WP Operations LLC                       | Jackson                          |
| Stone, dimension            | Anderson Bros. & Johnson Co.            | Calumet and Marathon             |
| Do.                         | Buechel Stone Corp.                     | Calumet and Fond Du Lac          |
| Do.                         | Central Wisconsin Stone Inc.            | Marathon                         |
| Do.                         | Door County Custom Stone Inc.           | Door                             |
| Do.                         | Eden Stone Co.                          | Calumet, Fond Du Lac, Marathon   |
| Do.                         | Halquist Stone Co.                      | Calumet and Fond Du Lac          |
| Do.                         | Krukowski Stone Co.                     | Marathon                         |
| Do.                         | Lemke Stone Inc.                        | Waukesha                         |
| Do.                         | Michels Stone Corp.                     | Fond Du Lac                      |
| Do.                         | Oakfield Stone Co.                      | Do.                              |
| Do.                         | Peninsula Stone                         | Door                             |
| Do.                         | Rademann Stone & Landscape Company Inc. | Fond Du Lac                      |
| Do.                         | Rivard Stone Inc.                       | St. Croix                        |
| Do.                         | Valders Stone & Marble Inc.             | Manitowoc                        |

Do. Ditto.

<sup>1</sup>Most natural gemstone producers in the United States are small businesses that are widely dispersed and operate independently.

**EXPLANATION**

- Lime
- Sand and gravel (industrial)
- Stone (dimension)
- Sand and gravel (construction)
- Stone (crushed)



**Figure 2.** The production value of nonfuel mineral commodities from 2004 through 2014 in Wisconsin. Values less than \$5 million are not shown. For a complete list of nonfuel mineral commodities and production values for all States, please refer to the Statistical Summary chapter (tables 5, 6).