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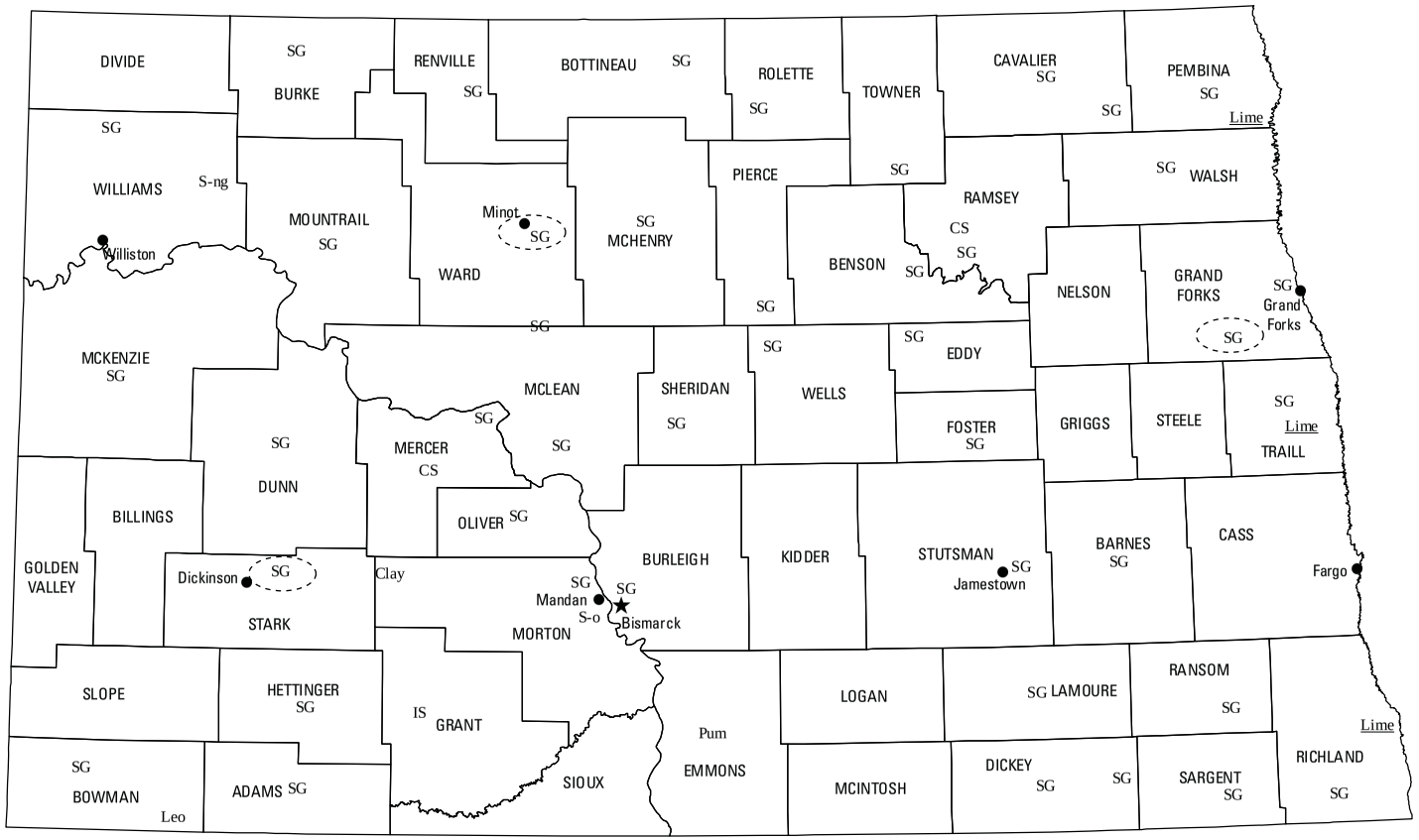
2006 Minerals Yearbook

NORTH DAKOTA

U.S. Department of the Interior
U.S. Geological Survey

July 2009

NORTH DAKOTA



0 25 50 100 Kilometers

Albers equal area projection

LEGEND

- County boundary
- ★ Capital
- ● City

MINERAL SYMBOLS (Major producing areas)

Clay	Common clay
CS	Crushed stone
IS	Industrial sand
Leo	Leonardite
Lime	Lime plant
Pum	Pumicite
S-ng	Sulfur (natural gas)
S-o	Sulfur (oil)
SG	Construction sand and gravel

Concentration of mineral operations

Source: North Dakota Geological Survey/U.S. Geological Survey (2006).

THE MINERAL INDUSTRY OF NORTH DAKOTA

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

In 2006, North Dakota's nonfuel raw mineral production[1] was valued at $44.4 million, based upon annual U.S. Geological Survey (USGS) data. This represented a somewhat small decrease[2] from the State's total nonfuel mineral value for 2005, which had a similarly small increase in value from 2004 to 2005.

North Dakota's leading nonfuel mineral by value continued to be construction sand and gravel, which the State continued to produce in significant quantities. This high-volume, low unit-value commodity accounted for approximately three-fourths of the State's nonfuel raw mineral production value. Lime was second by value. In 2006, a 2.7-million-metric-ton, or 24%, increase in construction sand and gravel production resulted in a $9.2 million increase in the commodity's value from that of 2005. The State's other nonfuel mineral commodities increased in value except gemstones, which remained unchanged (table 1).

The following narrative information was provided by the North Dakota Geological Survey[3] (NDGS). Production data in the text that follows are those reported by the NDGS based upon that agency's own surveys and estimates.

Commodity Review

Industrial Minerals

During 2006, 17 surface mining operators in the State reported information to the State Soil Conservation Committee (SSCC). The SSCC collects production data by volume, unlike the USGS, which collects data by mass or metric tons produced. Based upon these reports, 88 hectares (ha) was affected. The quantity of minerals mined included 2.01 million cubic meters of sand and gravel, 82,000 cubic meters of clay, 84,000 cubic meters of scoria, and 5,100 cubic meters of crushed stone, totaling more than 2.18 million cubic meters of mineral material. From 64 pits, ranging in size from more than 0.1 ha to 11 ha, a total of 342,000 cubic meters of overburden was disturbed.

Clay and Shale.—All the common clay mined in the State during this period was mined by the Hebron Brick Co. to produce brick. One-third to one-half of the clay mined for the manufacture of brick was kaolinite.

Leonardite.—Leonardite is an oxidized lignite. Currently, American Colloid Co. of Scranton in the southwestern corner of the State and Georesources, Inc. of Williston in northwestern North Dakota are the only leonardite mining operations in North Dakota, although companies mining lignite in the State routinely encounter leonardite. The two companies produced a combined total of approximately 134,000 metric tons (t) of leonardite in 2006, a nearly 72% increase from the 78,000 t produced in 2005. Leonardite is processed and used as a dispersant and viscosity control in oil well drilling muds, as a stabilizer for ion-exchange resins in water treatment, and as a soil conditioner.

Pumice and Pumicite.—Since 1970, volcanic ash (pumicite) has been mined intermittently from the Linton area in the central-southern portion of the State. In 2006, less than 100 t was mined by NURTURE, Inc., a Minneapolis, MN-based company, which produces and distributes an increasing line of volcanic ash-base products. The NDGS has previously determined that this deposit contains approximately one billion tons of pumicite.

Legislation and Government Programs

The SSCC, as designated by the State legislature, continues to administer the Surface Mining Report Law, which requires any person conducting surface mining operations for minerals other than coal to comply with the reporting requirements of North Dakota Century Code Chapter 38–16. Minerals included under the law are cement rock, clay, gravel, limestone, manganese, molybdenum, peat, potash, pumicite, salt, sand, scoria, sodium sulfate, stone, zeolite, or other minerals except coal. The SSCC has the regulatory authority to administer the reporting requirement, while the actual regulatory authority for most of these mining activities rests with the North Dakota Department of Mineral Resources. The law requires that any person or company that within 1 calendar year removes 7,650 cubic meters (10,000 cubic yards) or more of earthen materials or products (including overburden) affecting 0.2 ha (one-half acre) or more in combined mining operations must report the particulars of their surface mining activities. Some operators of smaller operations cooperate by voluntarily submitting summary reports to the SSCC, although not required to by law. Nevertheless, because not all operations report, the summary of surface mining statistics presented above is a conservative estimate of the amount of nonfuel minerals mined in the State in 2006. Information about North Dakota's nonfuel mineral resources, as well as fuel minerals and uranium, is available on the minerals page of the NDGS Web site at URL https://www.dmr.nd.gov/ndgs/Mineral/mineralnew.asp.

[1]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 2006 USGS mineral production data published in this chapter are those available as of March 2008. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL http://minerals.usgs.gov/minerals.

[2]North Dakota's total nonfuel mineral value in actuality significantly increased from that of 2005, but data for common clays, industrial sand and gravel, and lime were withheld so as to not reveal company proprietary data.

[3]Edward C. Murphy, State Geologist, authored the text of State mineral industry information provided by the North Dakota Geological Survey.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN NORTH DAKOTA[1, 2]

(Thousand metric tons and thousand dollars)

Mineral	2004		2005		2006	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays, common	W	186	76	W	105	W
Gemstones, natural	NA	4	NA	4	NA	4
Sand and gravel, construction	11,700	32,800	11,300	34,500	14,000	43,700
Stone, crushed	W	W	89	396	147	683
Combined values of lime, sand and gravel (industrial), stone [crushed miscellaneous (2004)], and values indicated by the symbol W	XX	11,300	XX	(3)	XX	(3)
Total	XX	44,300	XX	34,900	XX	44,400

NA Not available. W Withheld to avoid disclosing company proprietary data. Withheld values included in "Combined values" data. XX Not applicable.

[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

[2]Data are rounded to no more than three significant digits; may not add to totals shown.

[3]Value excluded to avoid disclosing company proprietary data.

TABLE 2
NORTH DAKOTA: CRUSHED STONE SOLD OR USED, BY KIND

Kind	2005			2006		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Granite	1	23	$103	--	--	--
Traprock	1	10	43	--	--	--
Volcanic cinder and scoria	1	42	186	1	139	$644
Miscellaneous stone	1	14	64	1	8	39
Total	XX	89	396	XX	147	683

XX Not applicable. -- Zero.

TABLE 3
NORTH DAKOTA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2006, BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	149	$1,080	$7.27
Asphaltic concrete aggregates and other bituminous mixtures	190	983	5.17
Road base and coverings[2]	3,640	10,900	3.00
Fill	239	497	2.08
Other miscellaneous uses[3]	34	205	6.03
Unspecified:[4]			
Reported	4,520	13,700	3.03
Estimated	5,260	16,400	3.11
Total or average	14,000	43,700	3.12

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes road and other stabilization (cement).

[3]Includes railroad ballast and snow and ice control.

[4]Reported and estimated production without a breakdown by end use.