

SELECTED DEVELOPMENTS IN WISCONSIN'S MINERAL INDUSTRY IN 1994

Thomas J. Evans 1995

The mineral industry in Wisconsin in 1994 was characterized by record production of nonmetallic minerals and mineral commodities, administrative rule development specifically for nonmetallic minerals, oil and gas administrative rule development, a low level of metallic mineral leasing activity, and the first full calendar year of copper, gold, and silver production from the Flambeau Mine.

WISCONSIN NONFUEL MINERAL PRODUCTION

According to the U.S. Bureau of Mines statistics for nonfuel mineral production (table 1), the value of Wisconsin's nonfuel mineral production in 1994 was \$343.5 million, which exceeded the previous year's record production by almost 10 percent. The increase in mineral value was led by the Flambeau Mine's output of copper, gold, and silver and the strong increase in the value of crushed stone. Crushed stone was the state's leading mineral commodity in terms of volume and value; construction sand and gravel was the second leading mineral commodity.

Mineral statistics are collected by the U.S. Bureau of Mines under a cooperative agreement with the Wisconsin Geological and Natural History Survey, University of Wisconsin–Extension.

ACTIONS WITH POLICY IMPLICATIONS

Nonmetallic mine reclamation bill enacted.

Assembly Bill 498, a statewide regulatory program for the reclamation of nonmetallic mining operations in Wisconsin, was adopted by a wide margin in the spring 1994 session of the Legislature. This program features a state-mandated, county-administered approach based upon administrative rules to be developed and promulgated by the

Wisconsin Department of Natural Resources (DNR). The DNR formed a technical advisory committee composed of industry personnel, DNR reclamation specialists, local citizens, local government officials, and Wisconsin geologists. The technical advisory committee worked throughout the year on draft rules; the proposed rules were submitted to the Natural Resources Board for approval for public hearings in 1995.

Proposed metallic mining legislation gets mixed results.

Four proposals modifying the state's metallic mining regulatory framework were introduced in the Legislature and received final consideration in 1994. Three bills were passed by the Assembly but failed to gain approval in the Senate. The three bills would have modified the application of the state's groundwater regulations to metallic mining (AB 341), banned all mining activity on state-owned land managed by the DNR (AB 471), and expanded consideration of the environmental track record of metallic mining permit applicants (AB 542). Supporters of the three failed revisions of the metallic mining laws requested that a special session be called so that the Legislature could reconsider them. The call for a special session failed, primarily because there was no obvious consensus among legislators regarding the disposition of these bills. The fourth bill (AB 732) was enacted into law as 1993 Wisconsin Act 240; it provides for disclosure of the presence of certain toxic materials on a metallic mining site by placing such operations under the reporting requirements of the state's toxic and hazardous materials laws.

Severed mineral rights legislation adopted.

Recent court decisions in *Cornell University v.*

County of Rusk were addressed in the adoption of AB 461, which became 1993 Wisconsin Act 391 in April 1994. The courts previously held that the issuance of a tax deed for property as a result of the surface owner's failure to pay property taxes extinguished title to severed mineral rights in that same property. The courts held that the unitary nature of the property taxation system in Wisconsin left the owner of the land surface solely responsible for the payment of property taxes. In the opinion of the courts, any contribution to the property's overall value, as a result of another party holding the mineral rights under separate title, was a matter of negotiation between those respective owners. The effect of Act 391 is to undo the court's interpretation of then-current law and make the Legislature's intent in this situation

clear. The newly created sec. 75.115, Wis. Stats., declares "the failure of an owner of a fee simple interest in surface rights to pay property taxes on land does *not* extinguish the rights of a holder of a fee simple interest in severed mineral rights related to that land" (emphasis added). The new statute became effective May 5, 1994 and is not retroactive.

Requested ban on sulfide mining denied by DNR. Several environmental organizations, local citizen groups concerned about metallic mining in northern Wisconsin, Native American communities, and individuals petitioned the Wisconsin DNR for administrative rule-making that they hoped would lead to a ban on the mining of massive sulfide mineral deposits in the state. The legal approach offered in support of this petition for rule-

Table 1. Nonfuel mineral production in Wisconsin, 1992–94¹

Mineral	1992		1993		1994 ²	
	Quantity (in million metric tons)	Value (in millions of dollars)	Quantity (in million metric tons)	Value (in millions of dollars)	Quantity (in million metric tons)	Value (in millions of dollars)
Gemstones	NA ³	\$0.005	NA	\$0.045	NA	W ⁴
Lime	0.473	26.579	0.511	30.880	0.511	30.880
Peat	0.056	0.553	W	W	W	W
Sand and gravel						
<i>Construction</i>	26.415	77.066	27.600 ⁵	82.800 ⁵	28.100	87.000
<i>Industrial</i>	1.303 ⁶	26.026 ⁶	1.479	31.399	W	W
Stone						
<i>Crushed</i>	23.133 ^{5, 7}	89.300 ^{5, 7}	26.248	98.026	28.500 ⁵	115.400 ⁵
<i>Dimension</i>	0.033 ⁵	4.227 ⁵	0.122	13.098	0.110 ⁵	12.411 ⁵
Combined value of other industrial and metallic minerals and values indicated by symbol W	—	(⁸)	—	57.109	—	97.818
Total value	—	223.756^{6, 10}	—	313.357	—	343.509

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

² Preliminary.

³ Not available.

⁴ Data withheld to avoid disclosing company proprietary data; value included with "Combined value" data.

⁵ Estimated.

⁶ Revised.

⁷ Excludes certain stones; value included with "Combined value" data.

⁸ Not applicable.

⁹ Value excluded to avoid disclosing company proprietary data.

¹⁰ Partial total; excludes values that must be concealed to avoid disclosing company proprietary data.

making is sec. 144.83(2)(a), Wis. Stats., in which the DNR is authorized to adopt minimum standards for mining-related activity that “may classify exploration, prospecting and mining activities according to type of minerals involved and stage of progression in the operation.” The DNR legal staff advised the Natural Resources Board that the requested rule-making was outside the authority of the DNR because the Legislature directed that metallic mining should be regulated and did not distinguish one type of mineral deposit from another in this statutory authorization. The specific statute cited is interpreted as allowing the DNR to promulgate rules with different regulatory controls among mineral deposits on the basis of the mineralogy of the deposit, but it does not permit the categorical ban of mining of any particular class of mineral deposit. Such a policy (banning sulfide mining) was considered to be the purview of the legislative branch of government. The Board’s subsequent decision to deny the petition for rule-making was issued in December.

Registration of professional geologists enacted. In April 1994, 1993 Wisconsin Act 463 was adopted; it requires that individuals working as professional geologists must be registered with the State of Wisconsin. The legislation established minimum education and practical experience standards, mandated an examination for qualification (after an initial “grandfather” period), and mandated the promulgation of administrative rules. Hearings on Chapter A-E 10, Wis. Admin. Code, were held in late 1994, and the registration requirements were in effect before the end of the year.

METALLIC MINERAL DEVELOPMENTS

Flambeau Mine completes full year of production. The year 1994 marked the first full calendar year of copper, gold, and silver production from the small open-pit Flambeau Mine near Ladysmith, Wisconsin (fig. 1). Production of gold-rich gossan ore began in May 1993. In 1994 Flam-

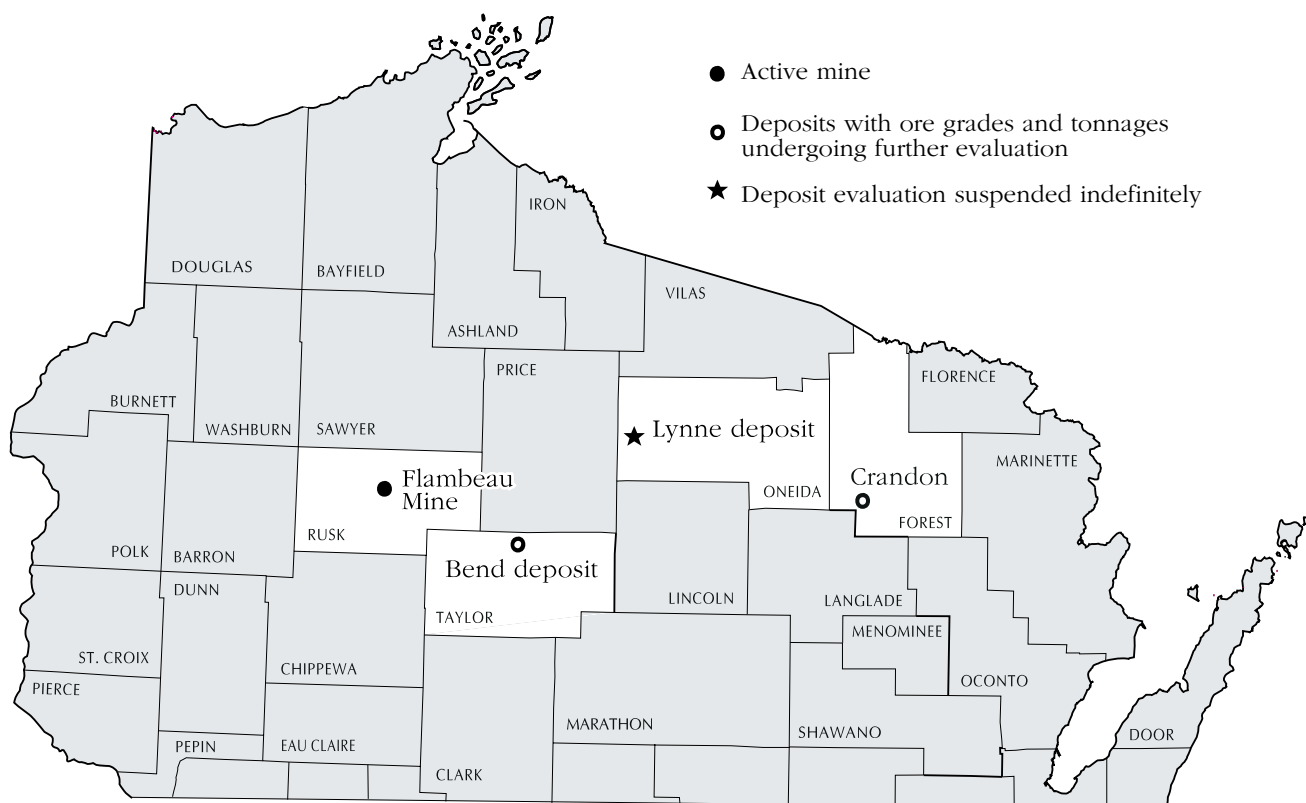


Figure 1. Sites of major metallic mineral projects in Wisconsin.

beau Mining Company—a subsidiary of Kennecott Copper Corporation, which is in turn owned by Rio Tinto Zinc—shipped three types of ore: gossan ore, highly enriched copper ore, and more typical massive-sulfide copper ore. Total ore production in 1994 was in excess of 300,000 tons. On the basis of seven months of ore production for 1993, Flambeau Mining Company paid \$505,000 in net proceeds taxes in 1994. Of this sum, payments of \$147,600 each were made to Rusk County, Town of Grant, and the City of Ladysmith. The balance of \$62,200 was remitted to Flambeau in partial repayment of the one-time construction period payment of \$300,000 advanced by the company in 1993. Flambeau Mining Company's 1994 tax liability, expected to be several million dollars, will be based on a full year of production.

Flambeau Mine production increase approved; river-pillar extraction considered.

Flambeau Mining Company sought a mining-permit modification for its open-pit mine near Ladysmith. The modification requested would allow Flambeau Mine to produce at an increased rate from 320,000 tons per year (+10 percent, or a maximum of 352,000 tons annually) to 450,000 tons per year (+10 percent, or a maximum of 495,000 tons annually). The DNR reviewed the modification proposal and held an informal local meeting with concerned citizens before issuing its determination to allow the modification as an insubstantial change in the mining permit. The DNR's decision and supporting Findings of Fact and Conclusions of Law were issued in August.

In October, Flambeau Mining Company submitted a proposal to extract about 81,000 tons of ore in the southwest end of the open pit, which is also known as the river pillar. Under the plan, the company would tunnel into the southwest pit wall to remove ore via a series of tunnels driven southwestward from the pit wall toward the Flambeau River to a point no closer than 140 feet of the river. The DNR determined that the proposal constituted a change in the mining plan that would necessitate a formal modification of the mining permit. At the end of 1994, Flambeau Min-

ing Company had not decided whether to proceed with the request.

Crandon Mine project evaluation focuses on water issues. Crandon Mining Company continued environmental baseline investigations in support of an anticipated June 1995 application for a mining permit for the massive-sulfide, zinc-copper orebody located about 3 miles south of the City of Crandon in Forest County, Wisconsin (fig. 1). The company submitted a Notice of Intent to Collect Data in Support of a Mining Permit Application (NOI) on February 15, 1994. A public hearing was held on the NOI in April. Later in the year, Crandon Mining Company received revisions of the document recommended by the DNR review and public comment. Principal issues of public concern include the effects of the proposed mine on the Wolf River, impacts upon private water-supply wells in the immediate area, long-term impacts related to mine-waste-disposal facilities constructed to handle mine tailings, impact of mine dewatering on surface-water bodies, and socioeconomic impacts of mine construction and operation on the economy of Forest County and the surrounding area.

Environmental investigations in 1994 concentrated on determining the potential impact of the operations of the large underground mine upon the area's groundwater. A pumping test was completed in 1994, after a challenge to the test's permit was unsuccessful in the courts. Most public concern centers on the potential impact of discharge of excess water that enters the mine or is intercepted prior to entering the mine. Some surface-water bodies in the area are classified as Outstanding Resource Water (ORW), which strictly limits the nature of allowable discharge. At the end of 1994, assessment of the volume and nature of such potential discharge was continuing; the company had not yet determined its preferred method of discharge. Other possibilities included discharging the treated water into groundwater seepage cells or non-ORW systems located farther from the proposed mine site.

Crandon Mine "botline" established by DNR. The DNR established a dedicated telephone line

(608/267.7534) to provide recorded announcements of scheduled technical meetings between the DNR and Crandon Mining Company and their respective consultants. The DNR has also released a proposed schedule for the Crandon Project; this schedule is subject to change as a result of the progress of technical meetings, the collection of necessary environmental baseline data, and the submission of the many permit applications, the environmental impact report, and the DNR's review of all of these documents. The Crandon Project appears to be on schedule for a June 1997 Master Hearing; a decision about the permits and any applicable conditions, if granted, should occur in early 1998.

Bend Project exploration activity renewed.

Sharpe Energy and Resources, Ltd. of Toronto, Ontario, Canada, has taken over the exploration of the Bend deposit, discovered in the Chequamegon National Forest in north-central Taylor County, near Perkinstown, Wisconsin (fig. 1). The single hole completed on this deposit in 1994 reportedly intersected significant mineralization. At the end of 1994, additional exploration drilling, focused on increasing the known reserves of this copper-gold massive-sulfide deposit, was underway. Sharpe also completed exploratory drilling on the Horseshoe deposit, a small zinc-copper massive-sulfide body in Lincoln County.

Mining Impact Board activity increasing. The operation of the Flambeau Mine and the submission of the NOI and related permitting interest for the Crandon Mine project signalled renewed activity for the Mining Investment and Local Impact Fund Board of the Wisconsin Department of Revenue. The Impact Board met twice in 1994 to keep abreast of the developments of metallic mining and exploration in Wisconsin and to consider the distribution of funds in support of local communities affected by mining activity. The Board is responsible for distributing and monitoring of funds under the NOI payments program for proposed mining projects, construction-period payments and first-dollar payment programs related to active mines, and discretionary grants to com-

munities near active and proposed metallic mining sites.

NONMETALLIC MINERAL DEVELOPMENTS

Statewide regulatory program begins with administrative rule development. The adoption of AB 498 early in 1994 mandated the development of administrative rules by the DNR. The draft of NR 135 was completed in early 1995. It was based upon the input of a technical advisory committee and the DNR's own reclamation specialists. The draft has been approved for public hearings to be held in April 1995; it includes sections on reclamation standards, permitting, administration and enforcement, DNR oversight and assistance, and registration of nonmetallic mineral deposits. The draft rule also includes a model ordinance to guide county consideration of the mandated regulatory program.

Administrative rule for mines, pits, and quarries modified. The Department of Industry, Labor and Human Relations (DILHR) adopted modifications to ILHR 8, Wis. Admin. Code, relating to mines, pits, and quarries. The modifications were essentially a repeal and re-creation of chapter 8 to include reference to the applicable Federal Mine Safety and Health Administration regulations and to specify amendments to those regulations for Wisconsin. Amendments cover standards for wall, bank, and slope stability, safety programs, and abandoned mine openings. The proposed rules contain the same requirements as the current rules for notification to begin operation, permits, and inspections.

Oil and gas administrative rules proposed. A modified version of NR 134, administrative rules covering oil and gas exploration and production, were the subject of hearings in November 1994 and January 1995. The proposed rules extend the existing NR 134 regulations, which had covered exploration only, to provide for DNR regulation of production. The modified rule was prepared in response to 1991 Wisconsin Act 262, adopted in 1992. Extensive public comment was received in two hearings in Ashland and one hearing in Madi-

Table 2. New acreage acquired for metallic mineral exploration and acreage for which leases or options were terminated, by county and company, in 1994¹

Company	BHP-Utah International, Inc.		Cominco American Resources Co.		Jump River Joint Venture		Totals	
	Leased	Term.	Leased	Term.	Leased	Term.	Leased	Term.
County								
Clark	0	0	271	0	0	0	271	0
Florence	1,480	0	0	0	0	0	1,480	0
Forest	2,160	0	0	0	0	0	2,160	0
Lincoln	0	0	0	0	80 ²	164 ³	80	164
Marinette	1,074	0	0	0	0	0	1,074	0
Price	0	0	340	0	0	0	340	0
Taylor	0	0	97	0	0	0	97	0
Totals²	4,714	0	708	0	80²	164³	5,503	164

¹ Acreage shown has been rounded off to the nearest whole acre.

² Lease executed by Sharpe Energy and Resources, Ltd.

³ Termination of lease held by Cyprus Gold Exploration Corp.

son. The draft of NR 134 was to be revised and reconsidered for promulgation in 1995.

MINERAL LEASING AND EXPLORATION ACTIVITY

Leasing for metallic minerals continues at a slow pace. Slightly more than 5,500 acres of land were newly acquired for metallic mineral evaluation through leases recorded in county registers of deeds offices in seven Wisconsin counties in 1994 (tables 2 and 3). This represents an increase over 1993, but the level of activity remains low overall. Most leasing activity in 1994 was in north-eastern Wisconsin by BHP Minerals International Exploration. Lease terms in general are little changed from previous years; acreage rental payments generally increase annually from \$5 per acre per year to reach \$10 or more after about four years. Production royalties are typically 5 percent of net smelter returns.

No leases were recorded in 1994 for oil and gas evaluation.

Metallic mineral exploratory drilling increases; deposit evaluations lead activity. Exploration (drilling) activity increased in 1994, but more than half of the drilling was for evaluating

Table 3. New mineral acreage contracted for leasing, by year¹

Year	Metallic mineral transactions (total new acreage)	Oil and gas transactions (total new acreage)
1978	81,596	—
1979	16,417	—
1980	51,211	—
1981	29,465	—
1982	18,489	—
1983	14,099	24,002
1984	3,136	196,408
1985	1,270	479,012
1986	1,566	19,335
1987	10,122	18,029
1988	7,137	—
1989	19,524	—
1990	33,555	—
1991	49,075	16,261
1992	55,605 ²	14,618
1993	1,565	1,284
1994	5,503	—

¹ Totals shown do not indicate land currently under lease due to terminations of leases and lapse of the term of the lease.

² Total shown includes a single transaction of 41,675 acres in Forest County.

Table 4. Summary of metallic mineral exploration in Wisconsin, 1990–94

	1990	1991	1992	1993	1994
Companies licensed to drill ¹	8	9	8	8	9
Newly licensed companies ¹	1	3	0	2	2
Companies conducting drilling programs	3	4	6	4	5
Total counties with drilling activity	2	8	8	5	8
Total holes drilled (development drilling) ²	72 (68)	128 (111)	24 (7)	18 (10)	26 (14)
Total length drilled, in feet (development drilling)	35,875 (33,852)	94,321 (84,179)	22,585 (11,005)	10,492 (4,493)	34,499 (23,426)
Bedrock length, in feet (development drilling)	30,862 (28,887)	85,317 (81,146)	19,332 (10,055)	7,405 (3,543)	31,653 (21,658)

¹ An exploration license for metallic minerals may be obtained at any time, but expires July 1st. These totals include companies licensed for all or part of the indicated calendar year.

² Numbers in parentheses refer to drilling at known mineral deposits. Totals include figures shown for development drilling.

Table 5. Metallic mineral exploration in 1994, by company and county

		Drillholes	Bedrock length (in feet)	Total length (in feet)
Company	BHP–Utah International, Inc.	5	4,031	4,337
	Cominco American Resources Co.	3	654	947
	Crandon Mining Company	9	15,508	16,991
	Flambeau Mining Company	7	10,083	10,516
	Sharpe Energy and Resources, Ltd.	2	1,377	1,708
Total		26	31,653	34,499
County	Clark	1	361	450
	Florence	4	3,310	3,552
	Forest	9	15,508	16,991
	Iron	2	293	497
	Lincoln	1	741	922
	Marathon	1	721	785
	Rusk	7	10,083	10,516
	Taylor	1	636	786
Total		26	31,653	34,499

Table 6. Metallic mineral exploration licensees, 1994¹

License number	Company	License number	Company
5	E.K. Lehmann and Associates of Wisconsin, Inc.	34	Cominco American Resources Co.
28	BHP-Utah International, Inc.	36	Cyprus Gold Exploration Corporation
30	Flambeau Mining Company	37	Crandon Mining Company
33	Phelps Dodge Exploration East, Inc.	38	Kennecott Exploration Company
		39	Sharpe Energy and Resources, Ltd.

¹ Companies listed were licensed to explore for metallic minerals or oil and gas in Wisconsin for all or part of 1994. License numbers not listed represent licenses issued previously to companies that did not renew their licenses for any part of the 1994 calendar year. No individuals or companies were licensed for oil and gas exploration during the 1994 calendar year.

known mineral deposits (development drilling). Table 4 summarizes exploration activity for the past five years. Of interest in 1994 was the drilling associated with the Flambeau Mine as the company evaluated the possible presence of deep (below maximum pit level) mineralization. Because the open pit is scheduled to become a mine-waste-disposal facility after mining at Flambeau is completed, it was necessary to develop information indicating whether or not economic mineral deposits were present beneath the mining level. Results reportedly indicated that deep ore was not an issue at this site.

Figure 2 shows the location and extent of exploration for metallic minerals and oil and gas in Wisconsin from 1977 through 1994.

Activity on federal lands in the state. Nine prospecting permits were in force on federal land in Wisconsin at the end of 1994. Eight permits were held by Cyprus Gold Exploration Company

(now operating in Wisconsin as Cyprus Amax Minerals Company) in the Chequamegon National Forest in Taylor County for the area included in Cyprus' preference right lease application for land on which the Bend copper-gold deposit is located. BHP Minerals International, Inc., drilled four exploratory drillholes on its single permit holding in the Nicolet National Forest in Florence County. Fifteen additional prospecting permit applications (Cyprus Gold) in the Chequamegon Forest were pending at the end of 1994; four applications (BHP) were pending in the Nicolet.

Nonmetallic mineral activity in recent years within national forests in Wisconsin was primarily sand and gravel production from about 20 operations in the Chequamegon National Forest and a small number of operations producing crushed stone in the Nicolet National Forest. Production of these common variety minerals is subject to leasing under the authority of the U.S. Forest Service. ■

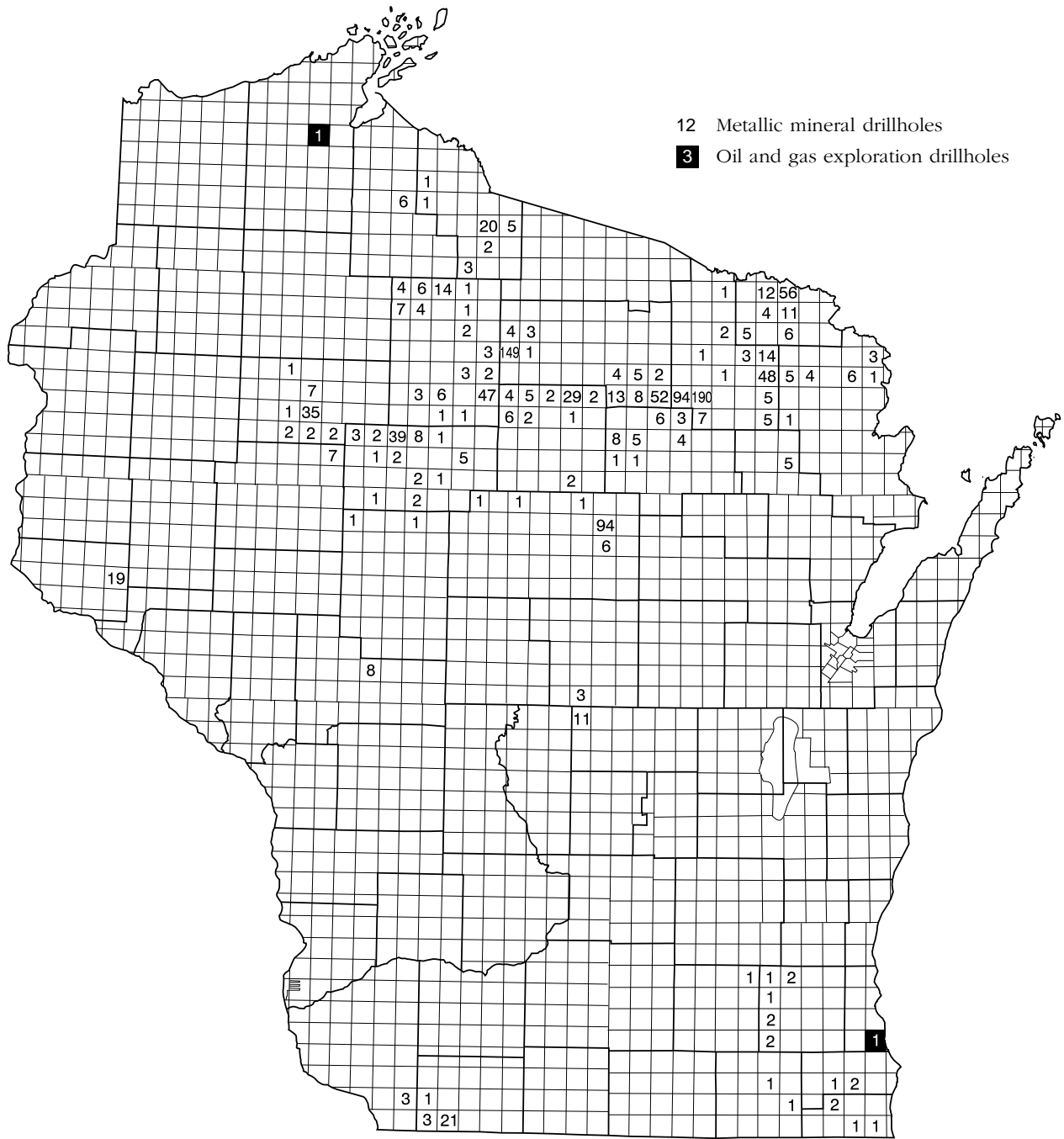


Figure 2. Metallic mineral exploration in Wisconsin, by township, 1977–94. The number of metallic mineral drillholes constructed in a township is shown by arabic numbers; oil and gas exploration drillholes, by the number in reverse (white with black background). All drillhole data are from public records (drillhole abandonment reports submitted by mineral exploration companies to the Wisconsin Department of Natural Resources).

Published by and available from



University of Wisconsin–Extension

Wisconsin Geological and Natural History Survey

3817 Mineral Point Road • Madison, Wisconsin 53705-5100

James M. Robertson, *Director and State Geologist*

The Wisconsin Geological and Natural History Survey does not guarantee that this report is free from errors or inaccuracies and disclaims any responsibility or liability from interpretation of the report or any decisions based thereon.

Published as public domain; reproducible without permission. Source credit requested.

The use of company names in this document does not imply endorsement by the Wisconsin Geological and Natural History Survey.

University of Wisconsin–Extension provides equal opportunities in employment and programming, including Title IX requirements.

If you need this material in an alternative format, please contact the Wisconsin Geological and Natural History Survey (☎ 608/262.1705) or the UWEX Affirmative Action Office.