

SELECTED DEVELOPMENTS IN WISCONSIN'S MINERAL INDUSTRY IN 1991

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1992

In Wisconsin, the year 1991 was characterized by near-record nonmetallic mineral production, new metallic-mine permitting, oil and gas exploration, legislative review of mining regulation, major court decisions affecting severed mineral interests, and steady leasing activity for metallic minerals in northern Wisconsin. Evaluation of two metallic mineral deposits continued throughout the year.

Wisconsin mineral production

Nonfuel mineral production in 1991 is estimated at \$212 million, which is nearly identical to the previous year's record value of mineral output (table 1). Crushed stone, construction sand and gravel, and lime were the leading mineral commodities produced; peat, industrial sand and gravel, dimension or building stone, and gemstones were also produced. Sales of peat, lime, construction sand and gravel, and dimension stone increased during the year, offsetting declines in the value of sales of industrial sand and gravel and crushed stone. (Mineral statistics are collected by the U.S. Bureau of Mines under a cooperative agreement with the Wisconsin Geological and Natural History Survey.)

Actions with policy implications

Legislature considers additional regulation. Several bills dealing with metallic mineral regulation and oil and gas production regulation were introduced into the Wisconsin Legislature in 1991. Bill AB701, introduced late in the year, related to regulation of oil and gas exploration and production, imposed a severance tax on oil and gas, and provided authority to the Wisconsin Department of Natural Resources (DNR) to adopt rules to regulate oil and gas production.

Metallic mineral legislation considered in 1991 covered activity on state-owned land, past environmental compliance records of mining companies, and expanded environmental regulation. Bill AB27 (along with companion bill SB132), introduced early in 1991, was passed by both houses of the Legislature following public hearings and legislative review. It was vetoed by Governor Thompson and the veto was not overturned during subsequent legislative consideration. Bill AB27, the language of which was similar to that of language in the previous year's budget bill, would have prohibited metallic mineral activity on lands managed by the DNR. An alternative approach to this issue was the focus of SB224, introduced in June, which sought to limit metallic mineral development by expanding the concept of lands unsuitable for mining by eliminating the restriction of unsuitability to surface mining only. This bill failed to gain sufficient support in the Legislature.

Bill AB81 was introduced in February 1991 and eventually was passed by the Assembly but did not receive favorable consideration in the Senate. The goal of this multi-faceted environmental regulation bill was the expansion of the scope of the state's environmental protection activity by a) prohibiting the issuance of a mining or prospecting permit in any shoreland or wetland; b) prohibiting mineral activity on land managed by the DNR; c) prohibiting uranium mining; d) expanding mining-company liability; e) mandating the preparation of an environmental impact statement for all mining projects, including consideration of cumulative impacts of the proposed mine and existing and potential mining projects; f) expanding the consideration of the concept of net substantial adverse impact to include any area in the state; and g) eliminating the optional use of local agreements now allowed under the mining regulations between mining companies and local units of government.

Bill AB661 was introduced late in 1991 and focused on the local agreement statute (s. 144.839, Wis. Stats.) as well as ways to provide funds from the mining investment and local impact fund board to support early involvement of local governments in the development of local agreements. This bill is expected to receive final consideration in 1992.

Also to receive final consideration in 1992 was SB240, which was introduced in June 1991 and which expanded the scope of the DNR mining-permit review process to include the collection of information on a mining-permit applicant's previous record of environmental compliance. This legislation was the object of several hearings and considerable legislative activity as it passed the Senate in 1991 and moved into the Assembly for further evaluation.

Severed mineral rights case decided. The 1990 lawsuit filed by Cornell University against Rusk County, decided in favor of the county late in that year, was appealed to the Court of Appeals, District III (Case No. 91-0581). *Cornell v. Rusk* dealt with the effect of a tax deed, taken by the county on tax-delinquent property, on the continuing existence of previously severed mineral interests on that same parcel of land. The Rusk County Circuit Court had ruled that the tax-deed process did not affect the viability of severed mineral interests because such interests constituted a separate class of property. In January 1992, the Court of Appeals reversed this opinion, holding that the value of severed mineral interests was attributable to the surface owner for tax purposes, and tax delinquency on the part of the surface owner constituted an impairment to the continuing existence of the severed mineral interests. (Later in the spring of 1992, the Wisconsin Supreme Court denied Cornell's petition for review of the Appeals Court decision, effectively letting stand their reversal of the circuit court's action on *Cornell v. Rusk*.)

County governments in northern Wisconsin have historically acquired large land areas through tax delinquency proceedings. Previously severed mineral interests on some of these holdings raised questions about the current status of mineral ownership and the county's ability to convey such mineral interests in the form of leases for metallic mineral exploration. The Supreme Court's refusal to review the Court of Appeals decision on *Cornell v. Rusk* created the first definitive court ruling on this subject in Wisconsin, and affirmed that counties acquiring land by way of a tax deed do, in fact, acquire all the land in most cases, including the minerals, even if mineral interests had been previously severed.

Oil and gas developments

Oil and gas exploration licenses issued. Under a regulation adopted in 1987, the DNR issued the first two licenses for oil and gas exploration in the state. License OG-1 was issued to Terra Energy, Ltd., early in 1991 and OG-2 was issued to Badger State Oil Co., Ltd., in August. Companies licensed to explore for oil and gas are subject to performance bonding requirements of \$50,000 (minimum) and a variety of notice and review requirements prior to drilling an exploration drillhole and are required to properly abandon such drillholes upon completion. Reclamation of drillsites is also subject to DNR regulation.

Oil and gas exploration initiated. Badger State Oil Company drilled a shallow exploration hole in the Town of Oak Creek of southern Milwaukee County on land owned by Marino Construction Company (SE 1/4, sec. 25, T5N, R22E). The hole was started on December 21, 1991, and reached a depth of 205 feet on December 23, 1991, when the drilling reached the Silurian dolomite bedrock. The hole was abandoned at 205 feet on December 29, 1991, in accordance with DNR regulations.

Environmental assessment initiated. The proposed drilling in 1992 of an oil and gas exploration drillhole in Bayfield County by Terra Energy was the subject of an environmental assessment or review by the DNR in late 1991. The assessment was completed in early 1992; the drillhole was completed and abandoned in the spring of 1992.

Metallic mineral developments

Flambeau Mine construction halted temporarily. Flambeau Mining Company started construction of its small open-pit copper/gold mine south of Ladysmith (fig. 1) in Rusk County on July 8, 1991. Construction began following receipt of all necessary permits for the proposed mine in January and the subsequent approval in late spring of five plans: 1) topsoil management; 2) vegetative aquascaping (recreation of wetlands); 3) surface-water management (erosion control); 4) preconstruction; and 5) quality assurance/quality control.

On June 4, 1991, the DNR announced the discovery of two specimens of a state-listed endangered species of clam. This discovery of endangered clams in the Flambeau River near Thornapple Dam and near the proposed mine site resulted in the DNR announcement of additional studies to be completed to further assess the extent of endangered resources not previously identified in the environmental assessment and permitting phases of the Flambeau Project review.

On August 9, 1991, the Lac Court Oreilles Band of Lake Superior Chippewa Indians, the Sierra Club, and Gregg Moore (individual) filed a motion for injunctive relief against the DNR and Flambeau Mining Company in the Dane County Circuit Court. The hearing on the motion began August 23, 1991. The suit sought the cessation of further site preparation and all mining activities at the Flambeau Mine site, and required the DNR to conduct public hearings and prepare, distribute, and issue a determination based on a supplemental environmental impact statement focusing on the possible impact of the permitted mine on endangered resources (Case No. 91-CV-2972). The court ruled in favor of the petitioners, requiring cessation of site preparation work until 30 days after the release of the supplemental environmental impact statement and the DNR's determination of the impact of mine construction and operation on the endangered resources in question. In early August the DNR began a supplemental study to its previously approved environmental impact statement. The completion of the study was not expected until the spring of 1992. The partially constructed site has been stabilized and prepared for resumption of construction activity, if approval is obtained.

Lynne and Bend Projects proceed. The Bend Project of the Jump River Joint Venture in north-central Taylor County and the Lynne Project of Noranda Minerals Wisconsin Corp. in west-central Oneida County progressed throughout 1991 (fig. 1). For the Bend project, effort was focused on further drilling to delineate additional reserves, the preparation and submission of a preference-right lease application to the U.S. Bureau of Land Management, and the acquisition of continuing financial participation of Asarco Incorporated and Cypress Gold Exploration, Inc., in the Jump River Joint Venture.

For the Lynne Project, 1991 activity centered on extensive subsurface delineation of orebody size and shape through a series of exploratory drillholes and the preparation of the *Notice of Intent to Collect Data to Support a Mine-Permit Application* (NOI). The NOI was submitted in late January 1992. In 1991, the DNR had notified Noranda of several issues of environmental importance—wetlands impact, surface-water discharge, and possible presence of lake beds in the project area—to help focus early environmental assessment and data-gathering activities. During 1991, departmental activity centered on collecting information about the lake bed through field observations and data development.

The Bend Project had been previously identified as a small underground operation to develop a 3.6-million ton copper/gold massive sulfide deposit located within the Chequamegon National Forest of Taylor County. The Lynne Project was proposed as a small open-pit mine to be developed on the 6.5-million ton massive sulfide orebody containing significant amounts of zinc, lead, and silver, and lesser amounts of copper and gold.

Jackson County Iron Company Mine site to be county park. In May the Jackson County Board of Supervisors accepted a Recreation Development Plan for the Inland Steel Mine Site in the Town of Brockway, about 4 miles east of Black River Falls. Jackson County Iron Company, a subsidiary of Inland Steel Company, operated this open-pit taconite mine from 1967 (first shipment of taconite pellets

was in 1969) until the site was closed in 1983. The total site covers 1,300 acres, including a 140-acre, 350 feet deep water-filled mine pit (lake), a 320-acre plant site, and a reforested former seepage basin that covers 140 acres. Other parts of the reclaimed site include natural areas such as forests, wetlands, and two high-quality trout streams. In accordance with the DNR-approved mine reclamation plan and the county's recreation development plan, the site will be developed into a county park featuring fishing, swimming, camping, hiking, wildlife observation, and natural-resource educational opportunities. The reclamation plan is to be completed in 1992, with park development to follow.

New leasing activity increases sharply. For the fourth year in a row, the number of new acres leased for metallic mineral activity increased significantly, rising 46 percent above the 1990 level (table 2). In addition, more than 32,000 acres of land were terminated from metallic mineral leases in 1991. Since 1978, more than 300,000 acres covered by new leases have been leased, but acreage actually remaining under some type of lease or option-to-purchase agreement is estimated at less than half of that total due to terminations or lapse of lease agreements.

In 1991, six companies were involved in lease transactions; five of these companies were engaged in new acreage acquisition. Leasing occurred in ten northern Wisconsin counties (table 3). Leasing activities of note included the leasing of more than 15,000 acres of county forest land by Marinette County to BHP-Utah International, the termination of large acreages leased previously by Noranda Exploration on land held by Lake Superior Land Company in northeastern Wisconsin, and the termination by default of more than 4,000 acres in Oneida County that had previously been leased under the competitive sale of mineral leases held in 1989. At the end of 1991, Cominco American Resources, using information obtained under agreements with Kerr-McGee Resources, was actively negotiating a lease with Iron County on land last evaluated in the mid-1980s.

Lease terms were similar to previous years—acreage rentals ranged from \$5 to more than \$10 per acre per year. Purchase options, when used, were generally at about \$1,000 per acre. Most leases were for five to ten years, although shorter lease lengths (three years, for example) were not uncommon.

Oil and gas leasing activity centered on Bayfield County. Typical leases included \$1 per acre rentals; production royalties were up to one-eighth of the value of oil and gas produced.

Exploration levels set a new record. For the second year in a row, the level of exploratory drilling for metallic minerals set a record compared to previous year's drilling activity (tables 4 and 5). Four companies were involved in exploration in eight counties. These four companies actively engaged in drilling included two companies involved primarily, but not exclusively, in development drilling. (Development drilling is drillhole construction activity on known mineral deposits for the purpose of further deposit definition to support decisions on the economic viability of the deposit.) The two centers of drilling included Noranda's Lynne deposit in Oneida County and Jump River Joint Venture's Bend deposit in Taylor County (explored on their behalf by E.K. Lehman and Associates). Several other targets were evaluated in 1991, although the level of activity on these "true" exploration drillholes was about the same as in the last five years or so (table 4).

A summary of exploration activity by geographic location is shown in figure 2 for the years 1977 through 1991. Mining companies currently licensed to explore for oil and gas or metallic minerals are shown in table 6.

Table 1. Nonfuel mineral production in Wisconsin, 1989-91¹

Mineral	1989		1990		1991 ²	
	Quantity (in thousand short tons)	Value (in thousands of dollars)	Quantity (in thousand short tons)	Value (in thousands of dollars)	Quantity (in thousand short tons)	Value (in thousands of dollars)
Lime	437	\$18,129	461	\$24,608	493	\$26,146
Peat	13	309	12	256	26	W
Sand and gravel						
Construction	21,700	56,400	29,572	73,750	30,400	77,500
Industrial	1,514	22,399	W ³	W	W	W
Stone						
Crushed	26,520	83,664	26,600	91,000	25,100	85,900
Dimension	35,587	4,376	31,316	3,811	31,000	3,900
Combined value of other industrial minerals and values indicated by symbol W	NA ⁴	xx ⁵	NA	18,622	NA	18,599
Total	NA	185,277 ⁶	NA	212,047 ⁶	NA	212,045 ⁶

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

² Estimated.

³ Withheld to avoid disclosing company proprietary data; value included with "Combined value" figure.

⁴ Not applicable.

⁵ Value excluded to avoid disclosing company proprietary data.

⁶ Partial total; excludes values that must be concealed to avoid disclosing company proprietary data.

Table 2. New mineral acreage contracted for leasing, by year

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 ²

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

² All acreage acquired in Bayfield County by Terra Energy, Ltd.

Table 3. New acreage acquired for metallic mineral exploration and acreage for which leases were terminated, by county and company, in 1991¹

County	BHP-Utah International		Great Lakes Exploration		E.K. Lehmann and Associates of Wis.		Jump River Joint Venture		Noranda Exploration		Phelps Dodge Exploration East		Totals	
	Leased	Term.	Leased	Term.	Leased	Term.	Leased	Term.	Leased	Term.	Leased	Term.	Leased	Term.
Florence	440	0	0	0	0	0	0	0	3,212	0	0	0	3,652	0
Forest	0	0	0	0	0	0	0	0	4,071	0	0	0	4,071	0
Langlade	0	0	0	0	0	0	0	0	0	0	80	0	80	0
Lincoln	0	0	0	0	0	0	0	0	340	0	953	0	1,293	0
Marathon	722	0	0	0	0	0	0	0	0	723	45	0	767	723
Marinette	17,965	0	0	0	0	0	0	0	0	19,632	0	0	17,965	19,632
Oneida	0	0	0	4,118	0	858	0	0	4,847	0	0	0	4,847	4,976
Price	0	0	0	0	1,194	6,311	0	0	10,560	0	0	0	11,754	6,311
Rusk	0	0	0	0	0	320	0	0	0	0	0	0	0	320
Taylor	0	0	0	0	0	151	3,880	0	0	0	766	0	4,646	151
Total	19,127	0	0	4,118	1,194	7,640	3,880	0	23,030	20,355	1,844	0	49,075	32,113

¹ Totals shown are rounded off to nearest whole acre.

Table 4. Metallic mineral exploration summary, 1987-91

	1987	1988	1989	1990	1991
Companies licensed to drill ¹	10	9	8	8	9
Newly licensed companies ¹	1	1	0	1	3
Companies conducting drilling programs	3	5	4	3	4
Total counties with drilling activity	4	5	6	2	8
Total holes drilled	32	48	45	72	128
(development drilling) ²	(9)	(19)	(0)	(68)	(111)
Total footage drilled	20,220	23,577	26,937	35,875	94,321
(development drilling) ²	(2,324)	(2,258)	(0)	(33,582)	(74,179)
Total bedrock footage	17,710	19,697	23,935	30,862	85,317
(development drilling) ²	(338)	(1,239)	(0)	(28,887)	(81,146)

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

² Numbers in parentheses refer to development drilling at sites of known mineral deposits. Totals include the figures listed for development drilling.

Table 5. Metallic mineral exploration by company and county, 1991

Company	Drillholes	Bedrock footage	Total footage
BHP-Utah International	4	2,467	3,311
E.K. Lehmann and Associates of Wisconsin, Inc.	10	10,158	11,851
Noranda Exploration, Inc.	110	71,136	77,296
Placer Dome U.S., Inc.	4	1,556	1,863
Total	128	85,317	94,321
County			
Florence	1	443	503
Forest	2	452	691
Lincoln	2	2,651	3,029
Marathon	3	2,640	2,704
Oneida	108	69,157	75,261
Price	4	2,961	3,835
Rusk	1	435	550
Taylor	7	6,578	7,748
Total	128	85,317	94,321

Table 6. Mineral exploration licensees, 1991¹

Mineral			
License number	Company	License number	Company
1	Exxon Minerals Company	29	Chevron Resources Co.
3	Noranda Exploration, Inc.	32	Placer Dome U.S., Inc. ²
5	E.K. Lehmann and Associates of Wisconsin, Inc.	33	Phelps Dodge Exploration East, Inc.
28	BHP-Utah International, Inc.	34	Cominco American Resources
		35	Asarco Incorporated
Oil and gas			
License number	Company	License number	Company
OG-1	Terra Energy, Ltd.	OG-2	Badger State Oil Co., Ltd.

¹ Companies listed were licensed to explore for metallic minerals in Wisconsin for all or part of 1991. License numbers not listed represent licenses issued previously to companies that did not renew their license for any part of the 1991 calendar year.

² License not renewed for July 1991 to June 1992 license year.

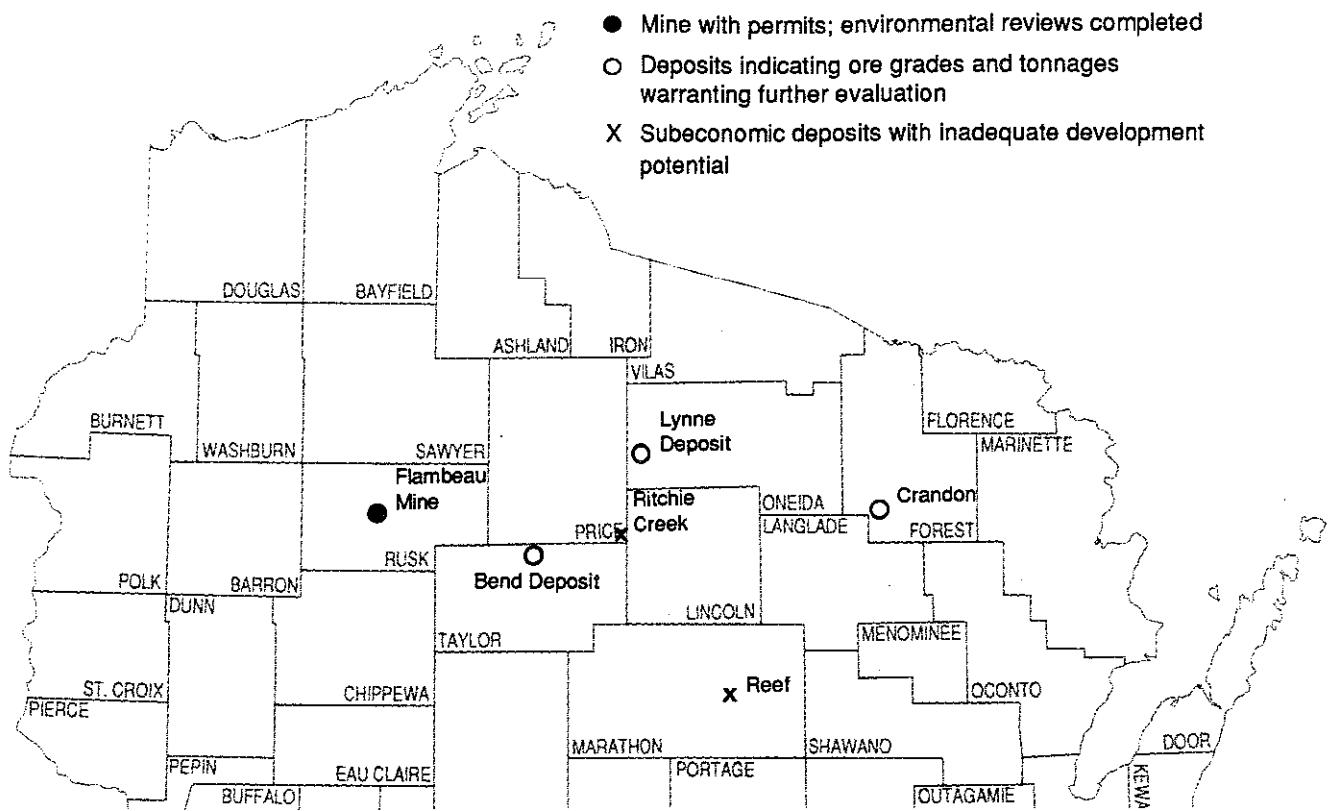


Figure 1. Sites of major metallic mineral projects in northern Wisconsin. Flambeau, Bend, and Lynne are discussed in text; in 1991 no activity occurred at the other sites indicated.

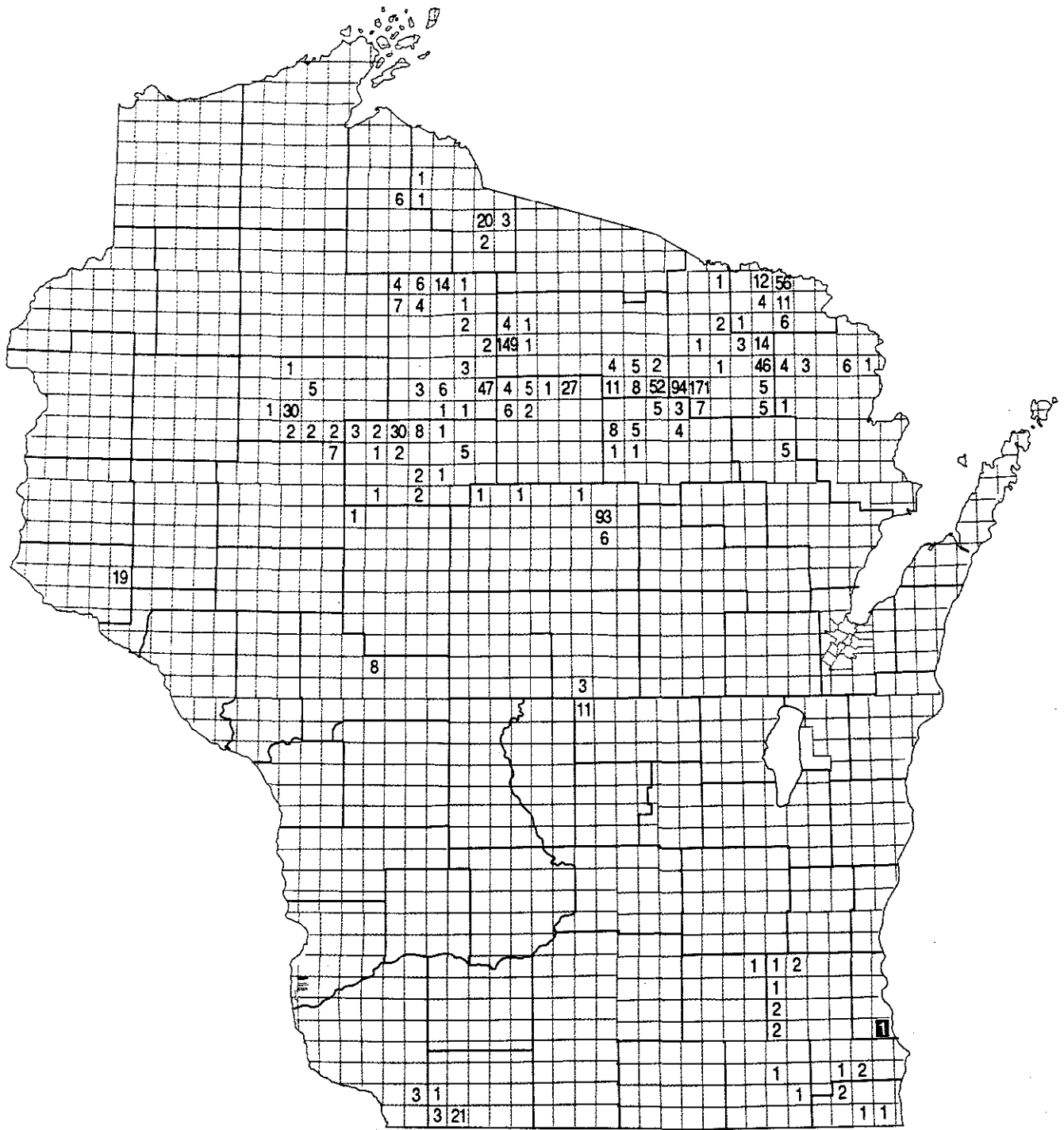


Figure 2. Mineral exploration in Wisconsin, by township, 1977-91. The number of metallic mineral drillholes drilled in a township is shown by arabic numbers; the oil and gas exploration drillhole, by the number in reverse (white with black background). All drillhole data are from public records—drillhole abandonment reports submitted by mineral exploration companies to the Wisconsin Department of Natural Resources.

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